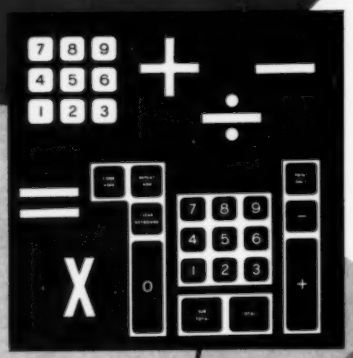
January-1960

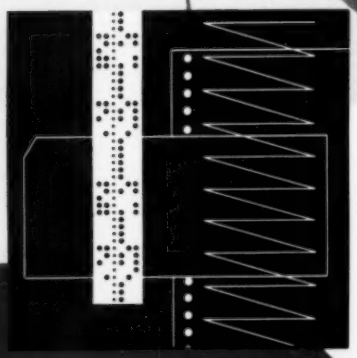
DATA PROCESSING

The Magazine of Automatic Office Methods and Management

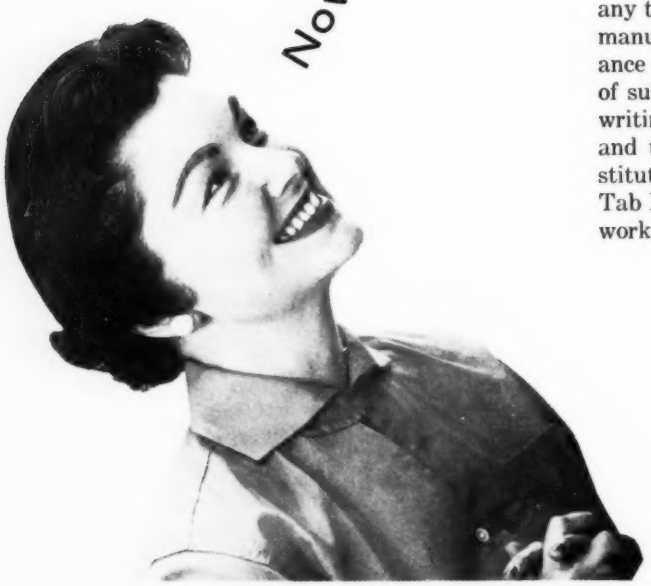


The TOTAL SYSTEMS Concept

page 15



Now... "Home on Time" is a Habit!



Carditioner in the Tab Department changes overtime to free time!

Obscurely mutilated cards kept the "flow" out of this Tab Supervisor's department. Visual sorts always skipped over some of them. Machines misread. Machines jammed. Men and equipment sat idle. Often the day's work lasted into the night.

Now, a Cummins Carditioner puts "flow" in this Tab Department. Automatically it reconditions 275 cards a minute – makes crumpled cards machineable, rejects any that are stapled, taped or have folded corners. No manual sorting, hardly any misreadings – reports balance easily. Jams drop by a whopping 75%. Punching of substitutes is all but eliminated, together with rewriting, reproducing, reverifying, refiling, rerunning, and the 6-7% errors which always occur when substitutes are punched. A single machine helps make the Tab Department a model of efficiency – good news for workers and management alike!

Send for new booklet!
See at a glance how Carditioner irons out cards, irons out the kinks in tab operations. Case histories on request.

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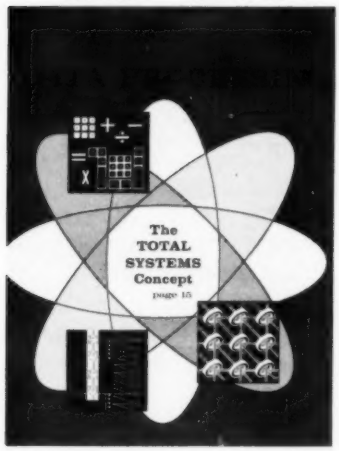
DATA PROCESSING

(formerly PUNCHED CARD DATA PROCESSING)

Volume Two • Number One



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OBSERVATIONS . . .

from the publisher . . .

IT IS WITH REAL PLEASURE that we now serve you monthly. This increased frequency offers many advantages. It means that dated information on activities in data processing will reach you sooner.

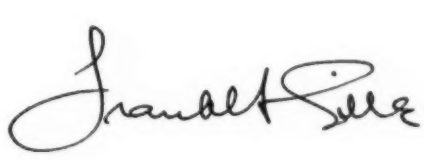
Obviously you will receive much more information in the twelve issues per year than in the six formerly published. It is not the quantity of information, however, that is really significant; it is the "idea content" of this material that gives it value.

With this thought in mind a few words on our editorial policy might be of interest to you. It has always been our objective to give you a balanced presentation in each issue of this magazine. By "balanced" we mean including information in each issue on as many important phases of office data processing as possible. Also, we try to include a balance in the types and makes of equipment in use.

We have received comments from more than 500 readers during the first year of this magazine's life. These comments have been the basis for formulating our editorial objectives. We know that you are keenly interested in *punched card* applications and information. And regardless of your present situation we know that you are interested in the practical use of punched tape and computers. In addition, many readers have given support to our policy of regularly including information on supervision, personnel problems, the most effective use of forms, and automated management principles. We attempt to give these subjects original slants to bring out the ideas most graphically. This is the reason for including such departments as "The Forum" and the new column introduced in this issue, "I've Got a Problem." Other departments of this type will appear soon.

Producing a *balanced* editorial format is not the easiest way to publish a magazine. It means the exclusion of much readily available material in preference to creating new articles to fit the plan.

We are greatly encouraged by the splendid acceptance which now makes it possible to serve you each month. And your comments will continue to be welcomed.



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An organization very often loses sight of overall goals when attempting to automate. The requirements of efficient data processing make this all too easy. The author places emphasis on how to achieve efficient data processing, keeping goals in view.

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THE AUTHORS

KENNETH F. ZINO *("The Total Systems Concept")* as the Systems Manager for Prentice Hall, Inc., in Englewood Cliffs, N. J. is responsible for all inter-department procedures and all applications covering the planning, installing and control of those operations with respect to performance, schedule and cost. His last six years have been spent in improving customer relations data processing for the many selling divisions of Prentice Hall, and the planning for the use of electronic data processing equipment. He holds a Bachelor's Degree from the Baruch School of Business, City College of New York. He is a frequent lecturer before the National Machine Accountants Association and the Systems & Procedures Association, holding memberships in both organizations and at present serving as president of the Palisades Interstate Chapter of S. P. A.

HERMAN LIMBERG *("Beating the Paper Octopus")* is Senior Management Consultant and Director of Management Reporting in the Office of the City Administrator of The City of New York. He is a member of the Advisory Committee to the Suggestion Award Board and a member of the New York State Committee on Essential Records.

A specialist in organization, human relations, systems and procedures, management controls and training, Dr. Limberg is a lecturer in management at the Baruch School of Business and Public Administration of The City College of New York. He has taught at N.Y.U., Pace College, Brooklyn College, and the New York State School of Industrial and Labor Relations of Cornell University. He has served as chairman of American Management Association seminars and Unit Leader of the AMA Systems and Procedures Course. He has written and lectured widely on automation.

KEVIN McLAUGHLIN *("Systems Planning")*, a Principal of the consulting firm of Rogers, Slade & Hill, joined that firm a year ago to take charge of its services in management information, systems planning, data processing and allied areas. Immediately prior to this connection he was employed by International Business Machines Corporation as a Project Coordinator, responsible for developing and testing systems study methods to be used in preparing for or expanding electronic data processing installations. He is a graduate of Manhattan College in Civil Engineering, and his earlier business experience includes engineering and manufacturing with General Electric Company and extensive and varied assignments in other member firms of the Association of Consulting Management Engineers. ■

Data Processing QUIZ

QUESTIONS:

1. Name the five components of a computer.
2. What are the code levels of punched paper tape?
3. What are edge-punched cards?
4. Define "echo impulse" and explain its function.
5. Define "parity check" and explain what it does.
6. What is a stored program?
7. Define "solid-state."
8. What are the three types of commonly used internal electronic computer storage?
9. Explain "hash total."
10. Define binary notation.

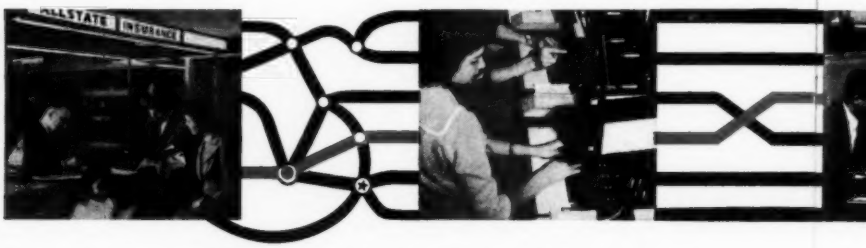
ANSWERS:

1. Input, memory, arithmetic, control and output are the components of a computer.
2. Punched paper tape has 5, 6, 7 and 8 code levels or channels.
3. Edge-punched cards serve a similar function as punched paper tape — as master input media, with the added advantages of larger area for interpretive data and easier handling qualities.
4. "Echo impulse" is a method of verifying the accuracy of printing in which the printing mechanism sends out a feed back impulse to be compared with the impulse which activated it.
5. "Parity check" is a technique based on the requirement that the number of bits in the representation of a number or character must be odd or even, depending on machine design. Invalid characters are rejected during data flow as they fail to satisfy the odd or even criteria.
6. A stored program is a set of instructions read into the memory of a computer which tells it what, where, how and when to act on the data it receives.
7. Solid-state involves the extensive and almost exclusive use of solid elements, such as transistor, diode or magnetic core (as opposed to vacuum or gaseous elements such as tubes) as components of data processing systems.
8. Drum, disc and core are commonly used types of internal electronic computer storage.
9. "Hash total" is a meaningless control total obtained by adding some field from each record, such as customer number or part number, to be balanced to a predetermined total usually obtained from source documents.
10. Binary notation is a system of arithmetic used in computers which represent values by 0 and 1 position. Thus any magnetic or punched dot, or magnetic core or transistor capable of having two states, can represent either "0" or "1".

A Statement from Allstate Insurance Company:

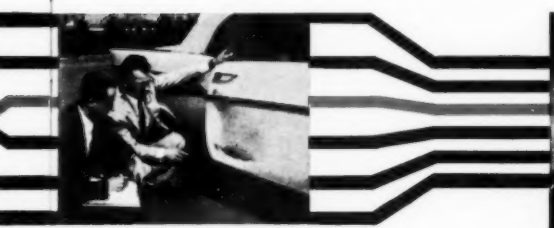
"We bought our first Burroughs computer in 1954, now own seven, and have more on order... these are big reasons why Allstate will continue to offer speedier customer service at low cost."

JUDSON B. BRANCH, *President of Allstate Insurance Companies*



James A. Reynolds, Vice-President of Allstate's Services Department (left) confers with Allstate's President, Judson B. Branch.

Back in 1930, the Sears Board of Directors considered the idea of applying Sears business methods to the sale of automobile insurance. They felt that by selling direct to the public, and keeping operating costs low, quality insurance protection could be sold at low rates. And by keeping customers satisfied through fast, fair service, they hoped to build and maintain a volume of insurance business that would make the low-overhead methods pay off. They settled on the name "Allstate" for the new company, and opened the first office in a Sears store in Chicago in 1931.



Since that time Allstate has had a dramatic rise in the insurance industry and has pioneered many new and more efficient ways of doing business.

In its first year, Allstate took in $118,000 in premiums through advertising in the Sears Mail-Order Catalog. In 1958, Allstate's volume had skyrocketed to a whopping $376,000,000. Today, Allstate is one of the world's largest stock companies offering insurance of almost every major kind. The company recently added accident and sickness insurance, and boat-owners insurance. Its comparatively new commercial insurance lines are booming. Allstate Life Insurance Company, a recently-formed subsidiary, already has over a billion dollars of insurance in force.

Allstate operates a vast network of zone, regional and district service offices in the United States and Canada, with foreign expansion now under way in Switzerland. At the present time there are more than 1,300 sales and service locations with more than 5,000,000 policies in force. One of the big reasons behind Allstate's growth is its dedication to customer service through fast, fair claim settlement, prompt response to inquiries, and lower premium costs. A powerful tool in aiding the company to provide swifter and better service is its use of Burroughs electronic data processing systems.

After a careful analysis of their needs, Allstate purchased a Burroughs 205 Computer, with magnetic tape equipment, in 1954. With the many complexities of insurance rating, endorsements, billing and coding, Allstate found the computer extremely useful in "cutting red tape" and speeding up policyholder service. More and more policyholders discovered that the protection they purchased through their Allstate policy was delivered promptly because the time consuming annoyance of manual handling was now replaced with electronic methods. Allstate also used the computer for statistical and management reports assembled in a fraction of the time formerly required.

Allstate's Assistant Vice-President and Head of Research, L. L. van Oosten.

In 1957 and 1958 Allstate purchased three more Burroughs 205's and used them for billing, accounts receivable, rating policy issuances, and endorsements. When Burroughs announced its large 220 System, with expandable core memory, Allstate purchased three of these and had them installed in 1959. More 220's are scheduled for installation this year.

In speaking of the over-all benefits to Allstate from its use of Burroughs Computers, Mr. Judson B. Branch, Allstate's President, said, "Primarily, we've been able to give our customers faster, more efficient service at much lower costs. The computers help us to 'cut red tape' and thereby speed our service and help us provide insurance at lower rates. They also provide us with a means of absorbing our substantial growth without a corresponding increase in our operating expenses. We've had other benefits, too. By developing vitally needed statistics, our computers have made available, on a regular reports basis, valuable up-to-date information for our management. In addition, they enable us to promote many of our present employes to positions of greater importance, productivity and interest."

In a company where efficient business methods have been a key factor in providing better service at lower rates, the cold eye of economic justification is constantly focused on its Burroughs equipment. A continual assessment and appraisal of its electronic data processing program has been made over the last five years.

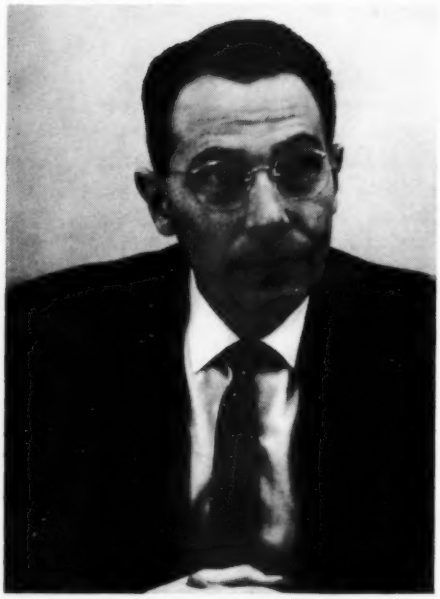
As a result of its analysis, Allstate is not turning back, but relying on Burroughs for a continuation and expansion of its electronic data processing program.

There are hundreds of other commercial and industrial users doing the same. Burroughs' complete line of electronic computers is backed by a coast-to-coast team of computer specialists, all prepared to tell you how Burroughs can help you in your business. For additional information, write Electro-Data Division, Pasadena, California.

Burroughs Corporation *"NEW DIMENSIONS/in electronics and data processing systems"*

CONTROL AT HERTZ

"Moore forms help us get Rent A Car reports days sooner"



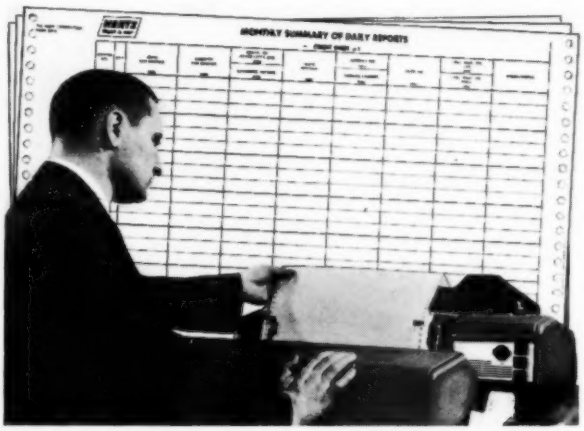
R. A. Petersen, Assistant General Manager,
Rent A Car Division of The Hertz Corporation

Hundreds of Rent A Car stations in cities all over the country mail complete daily reports to Hertz' Chicago central office. These reports cover over a million auto rentals a year, and they must be presented in summary to all levels of management for forecasts, market analyses and budget decisions.

In the past, these summaries were prepared manually from the daily reports. Rapid growth in Hertz' Rent A Car business required conversion from thousands of hand operations to an automated system.

With the automated system, the monthly revenue reports are ready days earlier, and contain more detailed information. The system is built around electric accounting machines, using punched cards. The only manual step is the initial key-punching of four cards for each daily report. From them, a preliminary weekly revenue report is run off, balanced and proved. For the full-scale summary, each month's cards are used again, and the machines automatically print the four sections of the monthly revenue report on specially designed continuous forms. The sections are two Credit Sheets, a Debit Sheet and a Statistical Summary of car rentals. Automatic machine accounting and printing eliminate all copying errors and the forms provide accurate copies of all reports for every office need.

"The Moore man's advice was a great help in designing the forms which we use in our system," said Mr. R. A. Petersen, Assistant General Manager at Hertz. The forms are continuous three-part Moore Speediflo forms—the company's control in print.



For more information on Automated Data Processing systems (ADP) and Moore-designed forms and systems for every size and kind of business, get in touch with the Moore man. He's listed in the Yellow Pages of your telephone book. Or write to the nearest Moore office. No obligation, of course.

MOORE BUSINESS FORMS, INC., Niagara Falls, N. Y.; Denton, Texas; Emeryville, Calif. *Over 300 offices and factories throughout the U. S., Canada, Mexico, Cuba, Caribbean and Central America.*

Build control with

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Data Processing FORUM

QUESTION (posed to prominent equipment manufacturers): "What was your company's most significant contribution to data processing during 1959?"

Fred R. Sullivan
President
Monroe Calculating Machine Co., Inc.
Orange, New Jersey

A MACHINE TO VERIFY NUMERIC PUNCHED HOLE INFORMATION simultaneous with the key punching operation —the Synchro-Monroe Card Punch Verifier—came into general use in 1959.

Designed for use in conjunction with the IBM 24 or 26 card punch, the Synchro-Monroe Verifier automatically accumulates and prints amounts to a total while cards are being punched, without additional operator effort. The verification is a simple direct by-product of card punching. A visual check of the hard copy, on adding machine tape, provides the proof.

In essence, the Verifier is a solenoid operated 10-key adding machine which prints card data directly from the punched holes as the cards reach the key punch reading station.

Extremely low in cost, the Synchro-Monroe Verifier is installed as an integral part of the IBM Card Punch and is controlled by the same program card that directs the punching operation.

The Verifier can work with any punching sequence, including the combination of alphabetic and numeric data; has complete control over X or R coded cards; and will automatically add, subtract or non-add, according to the field coding. The Synchro-Monroe can handle a full 11-column field, with 12 columns of totaling capacity, and is available in either a single or duplex register base.

Since the earliest days of machine accounting, a basic objective has been to provide maximum speed without sacrificing accuracy. This has been notably achieved by punched card data processing; and now the Monroe Calculating Machine Company, Inc. has developed the means of insuring accuracy without sacrificing maximum speed. This, we consider, was Monroe's most significant contribution to punched card data processing in 1959.

James M. Skinner, Jr.
President
Philco Corporation
Philadelphia, Pennsylvania

DURING 1959, the Philco Corporation made a most significant contribution to punched card data processing with the TRANSAC S-2000 electronic data processing system. Incorporated in the all transistor, asynchronous TRANSAC system is the fastest card reader in production (even faster than others that have been announced), and a very flexible punched card system in general.

The "Speedreader 2000" reads 51 or 80 column cards photoelectrically at the rate of 2000 cards per minute, regardless of the number of columns punched. This speed encourages greater use of punched cards as direct input to computers—because the reading rate and the processing rates are now more compatible. Time consuming and costly off-line conversions can also be avoided for the same reasons—although the punched card system can be used for off-line printing, conversion to magnetic or paper tape, and conversion from tape to cards.

Reading takes place in one of two modes: using either the standard punched card mode, or in the card image mode. In the latter mode, the punched holes are read without translating the column to a character. Thus, the twelve positions can represent two characters, and a total of 160 characters can be punched in an 80 column card. This mode also permits the TRANSAC system to accept cards punched by any system—providing a universal link between computers.

Another feature of the "Speedreader" is the ability to indicate, by a special character on the card, the end of the desired information to be read or punched. This factor facilitates handling records of variable sizes, while saving computer time.

Product engineering, manufacturing, quality control, and field testing have been and are being provided by Philco's Government and Industrial division.

(continued on next page)

Data Processing Forum *(continued)*

Thomas J. Watson, Jr.
President
International
Business Machines
Corporation
New York, New York

IN MY JUDGMENT, IBM's principal contribution to the punched card field during 1959 was the introduction of the 1401 Data Processing System. The 1401 gives smaller businesses many features that were formerly associated only with much larger and substantially more expensive equipment. Among these features are: magnetic core storage, magnetic tape input and output, and higher speeds in card reading, card punching, and printing.

Just as important, the 1401 serves as an economical bridge between punched card systems and electronic data processing. Thus smaller growing businesses, as their needs increase, can make an easy transition into full scale electronic processing.

IBM has always considered service to its customers just as important as excellence of product. By providing smaller businesses a convenient and economical entry into the advanced technologies of data processing, we believe that we have effectively widened the range of our services just as we have broadened the base of our market.

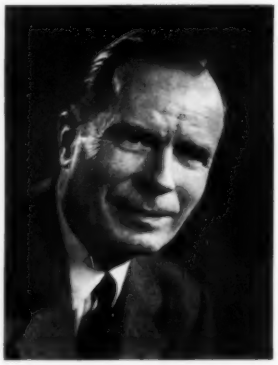
Robert S. Oelman
President
The National Cash Register
Company
Dayton, Ohio

THE MANUAL CONVERSION OF DATA into coded form, both into punched cards and punched paper tape, is one of the most costly and time consuming phases of any data processing system. The National Cash Register Company has made significant contributions in solving this problem by adapting its business machines—cash registers, accounting machines, and adding machines—to record information automatically as a by-product of necessary accounting, controlling, and recording operations.

This philosophy of "dual recording" of original transactions—a printed record on accounting documents and a punched record in tape or cards—has materially reduced the cost and time of preparing information for punched card and electronic data processing systems. Because of many automatic and sequence-controlled features of the parent machine, punching of data becomes a faster, more accurate, automatic process, thus saving duplication of effort and reducing the chances of errors.

Punched paper tape recorders and card-punch couplers have been designed to work with any of NCR's business machines. This "universal design" permits selection of a particular model and type of machine which best does the accounting job, while at the same time incorporating the necessary automatic controls which capture and regiment selected data into cards or punched tape.

Our company's sales of this type of equipment have almost doubled in the past year, and new developments in this area are expected to accelerate this trend still further in 1960.



Ray R. Eppert
President
Burroughs Corporation
Detroit, Michigan

FOR A NUMBER OF YEARS, Burroughs Corporation has conducted an extensive, multi-phased research program in the field of electronic data processing. During the past twelve months, this research pipeline has yielded a variety of new products of major significance to the office equipment industry.

In the forefront is a comprehensive machine system which for the first time puts clerical automation within reach of banks and other commercial institutions. A series of Burroughs products, linked by the common language of magnetic ink, provides integrated step-by-step automation . . . from the encoding of accounting media to final computation.

The Burroughs B251 Visible Record Computer (VRC) spearheads this new line of equipment. Embodying a revolutionary concept in computers, the VRC uniquely combines electronic processing with magnetic ink character recognition for the high-speed production of hard-copy accounting records. Since this computer reads data directly from the source document — checks, deposit slips, etc. — the need for code conversion or preparation of secondary media is eliminated.

The VRC includes four basic components — a high-speed document sorter, a solid-state computing unit, a ledger processor and a control console. Simplified design features permit the entire system to be supervised by a single operator after a brief training period.

Magnetically-encoded documents of varying size and thickness are sorted at the rate of 1,580 per minute. Data flows from the sorter through the externally

programmed computer to the processor, which selects accounts and posts on standard ledger and statement forms.

With the VRC as its hub, Burroughs' electronics product program has given banks and other customers access to greater levels of automation than ever before possible. Each Burroughs product qualifies as an operating unit within the systems framework, providing automation in progressive stages for any sized bank or firm.

Dause L. Bibby
Executive Vice President
Remington Rand Division
Sperry Rand Corporation
New York, New York

SOLID-STATE COMPUTER DESIGN TECHNIQUES became available to commercial data processing installations during 1959 through the coordinated efforts of Remington Rand Univac engineers, production management and sales personnel. Since these techniques are generally credited with making possible the so-called "third generation" of computers as represented by the Univac Larc system introduced last September, I feel our organization has made an outstanding contribution to the development of punched-card data processing.

The Univac Solid-State Computer, introduced in December, 1958, met with rapid acceptance in hundreds of commercial installations. It was mid-1959 when we announced the increased capability of the system to accept both 80 and 90 column cards and the compactness of the Univac Solid-State was demonstrated in special showings throughout the nation. Then, in September, concurrent with later demonstrations in the series, we announced the availability of tape components which can be added to the solid-state system for greater input and output versatility.

The development of transistors, Ferractors and magnetic cores which preceded 1959 culminated in the actuality of available systems put into operation during the year. With this definite proof of the efficiency of solid-state techniques we can consider the possible use of computers on air-borne or ship-borne platforms — environments which heretofore have been impossible. This, in itself, I think, substantiates solid-state techniques as an outstanding contribution for any given year. ■

Coming in the February issue

SOLVING ADMINISTRATIVE PITFALLS

COMMENTS FROM READERS

RANDOM INTERROGATION

I am interested in finding information on storing 40,000 stockroom locations, of 7 digits each, that can be randomly interrogated by means of a keyboard. The method of output is not important as we are in a position to shape our system to the equipment.

If any of your subscribers know of this type of equipment, I would appreciate hearing from them.

Very truly yours,

Donald A. Hughes

CHICAGO PNEUMATIC TOOL CO.
Manufacturing Division
2200 Bleecker Street
Utica 3, N. Y.

We welcome inquiries of this type. Who among our readers can advise?

Special Announcement . . .

CLASSIFIED ADVERTISING

As a service to readers, classified advertising in certain categories will now be accepted. These include:

EMPLOYMENT OPPORTUNITIES
Positions Offered — Positions Wanted
USED EQUIPMENT

Rate per line: $2.00 (five words per line). Minimum four lines, payable in advance.

Publication Box No. service $2.50 extra. (Inquiries will be forwarded *unopened* to you.)

DEADLINE: 1st of month preceding month of issue. (All advertisements subject to publisher's approval.)

CLASSIFIED ADVERTISING ORDER FORM

GILLE ASSOCIATES, INC.
956 Maccabees Building, Detroit 2, Michigan

Please insert advertising in the classified section of Data Processing:

☐ Position Wanted ☐ Position Offered
☐ Used Equipment

☐ Other_____

☐ Please have inquiries directed to Box No. and forward to us. Payment is enclosed totaling $_____.

Name_____ Company_____

Address_____

City_____ Zone___ State_____

NEWS SUMMARY

GENERAL

Earnings on the rise

Earnings of *The National Cash Register Co.* for the third quarter of 1959 rose 37% over earnings for the comparable period of 1958, Stanley C. Allyn, NCR board chairman, announced. Third quarter net income this year totaled $4,475,345, compared with $3,277,327 for last year's third quarter, Mr. Allyn said. Sales for the period were $104,252,586, or 13% greater than the $92,539,934 reported for the third quarter of last year.

Directors of *International Business Machines Corporation* declared a regular quarterly cash dividend of $.60 per share on the common stock, payable December 10, 1959, to holders of record November 10, 1959. The former quarterly dividend rate was $.50 per share.

Declaration of a stock dividend of 5% by the Board of Directors and continued increases in volume and profit over 1958 operations were highlights of the third-quarter report submitted to stockholders of *The Standard Register Company* by M. A. Spayd, President.

Burroughs Corporation's world-wide revenue increased 23% to $256,203,000 in the first nine months of 1959 as compared with the same period in 1958.

NEW APPLICATIONS

Dow Chemical Company has installed a Burroughs 220 computer at its Midland, Michigan facilities. The computer will be a part of a teletype system to connect with other laboratories of the chemical company for solving *chemical problems* in rocket fuels, textile fibers, plastics and other products.

A chemical company, insurance firm, naval bureau and veterans' office join computer users

An RCA 501 computer system will enable State Farm Life Insurance Company to review 500,000 *policies* a day as well as process its *month end reports* at a considerable time saving.

The newly established Bureau of Naval Weapons installed an RCA 501 system to *keep track of its weapons and ammunition* in shore bases and ships located around the world. The system was unveiled in its quarters in Washington, D. C.

The Philadelphia Veterans Administration Insurance Office installed an IBM 705 computer to *process its records*. The Philadelphia office is responsible for six and a half million policies in St. Paul, Denver and Philadelphia. A wire communications network is planned to link the two western offices to the computing center.

MILITARY

Telemeter Magnetics, Inc. has been awarded part of the project VEGA contract to develop *airborne digital programmers* for a space exploration vehicle.

First airborne tactical data system

The first airborne *tactical data system* was delivered to the U. S. Navy by Litton Industries. Designated AN/ASQ-54, it is an electronic early warning and weapon control system.

The U. S. Air Force's B-58 "Hustler" is having its guidance units flight tested without leaving the ground. Bendix Aviation developed the *simulator* for Convair which manufactures the Hustler.

High speed interchange of data

Electronic Engineering Company of Calif. announced a *Data Converter* which will convert from four binary inputs to a tape recording in the IBM 704 format. It will be used with outputs from digital radar and other recording devices. Also, a *Computer Language Translator* by EEC was delivered to North American Missile Division. This system enables different data processing systems which use different formats to interchange data at high speeds without going through intermediate translation methods.

An overall view of Carter's Ramac 305 installation. At the console is Sterling Button, Systems Analyst. In the background is an additional 5-million digit disk storage unit.

By A. A. Meyer

Incentive Payroll and Labor Efficiency Data

Random access computer is put to work for Carter Carburetor Division of ACF Industries

ACCURATE LABOR EFFICIENCY COMPARISONS—invaluable in production planning — always have been difficult to obtain from a complex incentive payroll. But a random access computer, which maintains all our labor accounting and distribution records in its disk storage, now handles our incentive payroll and produces this type of by-product analysis.

Background

We produce carburetors, fuel filters and fuel pumps as original equipment for new cars and as replacement parts. In addition, we manufacture fuel systems for all types of internal combustion engines, including those in power lawn mowers, outboard motors and chain saws. Our two plants and general offices are located in the St. Louis area.

We have a total of about 1700 production employees. Of these, about 1200 are paid on an incentive basis. In some cases, these payments are on an individual basis and in others on group basis. We have five ways of apportioning payment to those in a group.

In an average day, at least 5,000 individual records are created on the performance of some type of direct or indirect labor. In one week it is possible to generate and use more than 30,000 records reflecting labor expended on any one of 50,000 specific production operations, more generally identified in terms of 3,000 work hours.

From these source records we derive wages, labor distribution, labor standard cost and variances (which in turn affect inventory), departmental earned hours, and work order cost control and distribution. In short, they affect every accounting and recording function in which labor is the common denominator.

(continued on next page)

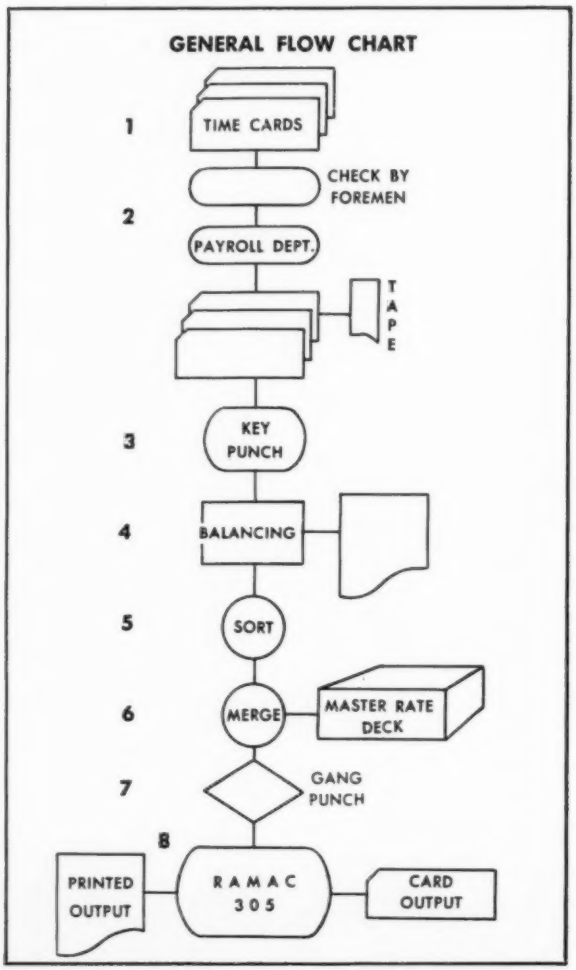
In essence, we feed the basic information piecemeal into the Ramac 305 by means of punched cards. The machine stores, accumulates, and computes the data according to a pre-determined program. Output is by means of punched cards which enable us to print the finished reports and comparisons on off-line equipment.

Procedure

1. As the first step in the procedure, workers in our plant sign in and out on particular jobs, using punched cards. Foremen check and approve the times on these jobs—then send the cards to the payroll department.

2. There, adding-machine operators total the times, put this information on tally cards, and batch the original cards by shift, by direct or indirect labor, and by group — one tally card per batch.

3. These time cards come to the data processing department, where card punch operators place into the cards the information stamped or written on them. This includes employee number, number of the part worked on, time on job, etc.



4. The cards then go through an IBM 407 accounting machine to produce a printed tabulation which we balance against the tally cards.

5. For individual incentive payments, the time cards are stored by part number and operation and

6. Merged with a master rate deck.

7. We gang-punch the rate for the part and operation into the time cards. Of our 50,000 part number operations, about 10,000 are currently active. In most cases there are, of course, several operations on the same part.

8. Each day, the merged master cards and time cards go into the Ramac 305, preceded by a header card which calls for the proper program stored on the disks.

The computer calculates incentive earnings, adds the cost-of-living factor, tests to make sure the earnings figure it has computed is above the Minimum Rate Allowance guarantee, makes the proper adjustment if it is not, and calculates the earned labor hours.

From these individual direct labor time cards, the computer also updates the employee's current earning record for the week, updates departmental direct labor records, updates departmental earned hour record and departmental attendance hour records. These hours, of course, give the ratio of departmental efficiency.

To compute group incentive figures, the time cards produced by the card punch operators are sorted by group before being fed into the computer. The "group master" stored on a disk is called out by these cards. This is an accumulation of money due the employees in the group. The machine computes the group earnings, the M.R.A., accumulates elapsed time, and computes the premiums for the second or third shifts. In short, it calculates the earnings for the entire group and then apportions them to all in the group.

The five methods of apportionment we use vary according to the type of group: (1) based on elapsed time spent in the group; (2) based on the hourly day rate; (3) a percentage breakdown between operators in the group; (4) based on straight day work (not an incentive group); (5) an assembly line, figured on an average incentive but with men getting an additional 25%.

From these group time cards, the computer updates each employee's current earnings record for the week, updates the departmental direct labor record, the department attendance hour record and the indirect labor account or work order record.

Each day the 305 *punches* out:

Group workers' time ticket cards which are listed off-line for the daily Group Workers Time Ticket Register.

A week-to-date-earnings card which is associated with the previous day's earnings summary to pro-

duce a report off-line showing the difference between the two, which equals today's pay. This is balanced to control totals printed out on the Ramac 305 typewriter. This report, in addition, incorporates the eight hour check. When an employee's time varies from eight hours, the variance hours are printed.

First Activity Cards—which show the time of each employee's first activity for the week, and indicate that he is present to be paid. (Not all employees work every week.) These cards serve to unload payroll information in sequence for the weekly cards used to print paychecks.

Exception cards—punched out for new cards or new operations for which standards have not been established.

Variance cards — when a foreman anticipates that an operation will vary from standard due to power failure, machine breakdown, etc., he codes the employee's time ticket. This code is key punched into the card, and the computer automatically punches the variance efficiency into the variance cards.

Each day the 305 *types* out:

A Daily Departmental Earned Hour Report.

Weekly, the computer calculates Group Scrap Charge-backs and Payroll Scrap Charge-back Deductions, and audits these corrections. It also updates the year-to-date record on each employee.

Ramac's weekly *punched* output includes:

Employee Total Wage and Check cards—containing all payroll information, taxes, withholding and deductions. The paychecks themselves are printed off-line by running these cards through an accounting machine.

Indirect Labor Record Cards—also printed off-line.

The computer's *typewritten output* on a weekly basis includes:

Departmental Standard Direct Labor Records.

Conclusion

Thanks to some excellent pre-planning by our systems people, together with the cooperation of IBM, we had our computer system going a full eight hours a day within three weeks after we installed it. We set up a complete pilot program for the cut-over, and consequently had only a few, very minor debugging problems in putting the computer into operation.

The Ramac 305 has the ability to handle many additional problems for us. We are currently working on additional problems at top speed, because we recognize the value of the labor accounting information the computer has made available. Hence, we are making a concerted effort to utilize the potential it offers us in so many areas, as quickly as possible. ■

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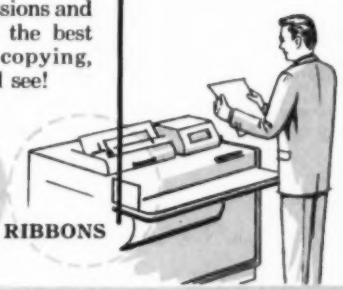

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MACHINE X	$1,355.	NEW MODEL 10	$1,790.
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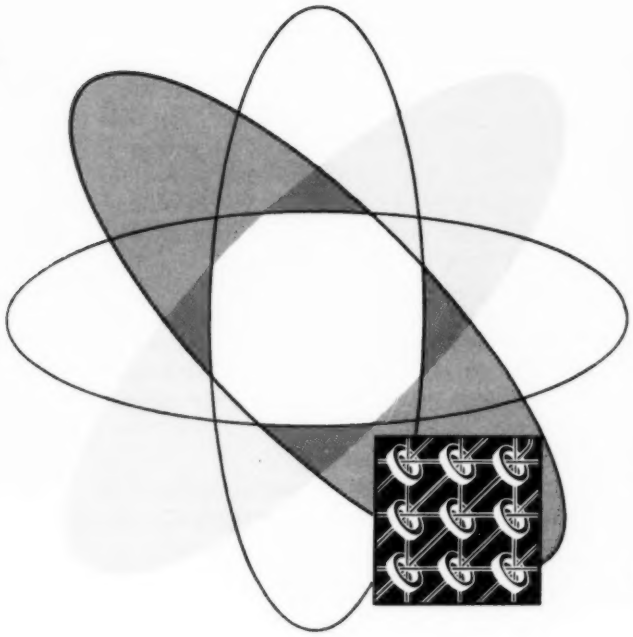

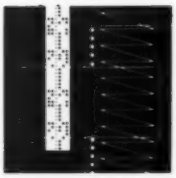

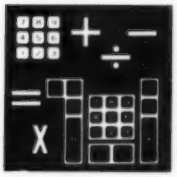

The TOTAL SYSTEMS Concept

THE PAST DECADE has brought us a whole new language. Today it includes space travel, satellites, missiles, and in business, we have electronic computers, integrated data processing, common language, random access, serial storage, automatic program and many other wonders. Every day the major executives in our corporations see, hear and read of the many accomplishments claimed in new record keeping systems installed by their competitors and other businesses. With all this emphasis, it is easy to see why management is very conscious of what is being done and why they want to be sure their companies benefit from this progress.

Today the data processing manager and the systems analyst are key men to the management team. Organizational planning recommends that these groups report to general management rather than to one division of management. This achieves the broad backing of management and eliminates divisional loyalties that could hamper good systems planning. While it is true that the actual production from a data processing unit replaces functions previously performed by a department within a division, it is also true that each data processing department can operate as a service bureau within the company. This is no different than the stenopool.

We who are engaged in systems work must accept the challenge management offers us. There is very little difference between the systems man and the data processing manager with regard to the potential benefit each can contribute to his company's future. It is recognized in electronic com-

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By Kenneth F. Zino

puter applications that a merger of systems and processing, via a data processing group or division, includes both the technical know-how of equipment performance and the objective viewpoint of the systems analyst in arranging the components to accomplish the objectives. The day has passed where the data processing manager, except by his choice, is relegated to the role of the nosy interloper attempting to eliminate other departments and enlarge his reign of control and authority.

Since our responsibilities are constantly changing with the techniques necessary for the new hardware, it might be well to establish what is considered to be the most important transition of the past decade.

Upon first introduction to data processing, all literature, and principally all thinking, worked around the theory of applications.

To automate we would select one of these applications, compare what is being done manually, then develop a procedure that could be used on punched card equipment and be justified through a cost saving. Then you would select the next application and add this.

Today we have these same applications; however, our approach to planning is much superior. We now investigate a series of these applications and improve what we have rather than simply convert over as we were doing. The feasibility study to justify the electronic computer and the techniques of integrated data processing have emphasized the need for the over-all approach. We now look to data processing areas where the greatest number of clerical operations are found rather than to the individual application. Example: Customer relations *(orders, invoices, accounts receivable, statistics, etc.)*, employee relations *(payroll, personnel records)*. Thus, instead of treating each application, we are now able to do a proper systems study.

General Principles

There are two general statements that provide for a good systems study. These are:

1. The purpose of the records.
2. The origin of the information.

The knowledge of how and where the information comes from and why we really need it, streamlines our thinking to develop the minimum effort to convert this basic information to the records necessary to fulfill the purpose.

Maybe this sounds like an over-simplification and conceivably it is, but the main purpose is that our progress in automation is going to depend upon the extent to which we are able to simplify and standardize our procedures. In many manually controlled operations investigated, more than half of the complicating elements were built in to serve purposes that no longer exist. It does not mean that these complications are not dealt with and handled in doing the work, but it does mean that the reason for them no longer exists. In fact, in many of the situations no one can remember the exact reason for the complication.

In addition to being able to eliminate a great many of these exceptions you are then able to put the necessary exceptions in their proper perspective. Initially, plan to handle these exceptions manually. With a procedure to handle the standard conditions these necessary exceptions either can be handled with slight modifications or will continue to be handled manually.

General Objectives

What should a system be measured against; or what does management need? They are concerned with:

1. What is happening?
2. How much does it cost?
3. Who should make the decisions?
4. What are the lines of authority?
5. What policy statements are required?
6. How effective is it operating?

This establishes what is considered to be the ground rules for good systems planning. Now let's analyze the steps that should be followed.

These are:

1. Preliminary Survey.
2. Getting and Recording the Facts.
3. Analyzing the Facts.
4. Developing the Solution.
5. Preparing your Recommendations.
6. Methods of Validating your Recommendations.
7. Putting the Recommendations into Effect.

I. Preliminary Survey

It would be nice if we were able to completely understand every aspect of our business so that when we were ready to start our study we would already have a clear picture of what was involved. Since this is impossible, we must be in a position to get this complete over-all picture. For this purpose the use of the preliminary survey is endorsed. Here, you are not concerned with the detail, but start by studying the output for the operating areas. The purpose is to get the feel of what they are trying to do. When this is understood, review with the proper manager what this information is, how he uses it, and search out his ideas as to what information is lacking or what information is unnecessary.

Be very careful. Stand in this man's shoes and try to understand what he is trying to do and how he goes about it. Now trace back and study the input records. This could be the customer's order, the time ticket, the employment requisition or other source document.

Knowing what you want to get and how it is initially received you should follow the steps through which the source document goes. At each point along the line, without getting too involved, ask for the reasons for the operation and briefly what problems they encounter.

Search for possible improvements, but remember this is a brief check for the purpose of giving you a quick background of the entire area.

Having seen and discussed each area, sit down and try to measure performance in each step against what you know is needed. Having progressed this far, you should now be in a position to determine rough objectives against which to measure your proposal. Remember this is a preliminary search. Don't try to solve the problem but simply get direction.

II. Getting and Recording the Facts

The objective of this phase can be summarized as having to do with all pertinent data concerning the following:

1. What is the system designed to produce? Is the outstanding requirement one of speed, quality, or cost?
2. Who are the personnel and what is the organization assigned to this area; how many and what quality?
3. What management policies are involved in the area? This could be pricing policies in a billing system or management's inventory policy in a material control area.
4. What is the cost for each area—number of personnel; average salary *(generally suffices except where there are unusual depreciations);* rental cost; forms supply; space charges. Try to keep it simple, and in many cases purposely overlook forms, supplies and depreciation, since these should be almost equal components under the new system.
5. Effectiveness of the area. First, does it do what it was designed to do in the time allowed, with the proper quality at a reasonable cost? If not, why not?
6. Inter-relationship with other areas. Who uses what they are producing and does the method of producing help or hinder these subsequent operations?
7. Are the forms, records and reports useful? Are there better ways of producing, using, storing, etc.?

This phase must be comprehensive, but extreme care must be used to eliminate undo emphasis on the extreme situation and the exception procedure. Also, you must stay within the scope of the overall project, rather than extend the scope of the study unnecessarily.

Fact gathering requires the time of supervisors. Needless consumption of such time reacts against you now and for future projects.

There are many ways that you can record these facts, but whatever the method, remember that it should be clear enough for someone else to understand.

It should result in:

1. An organization chart.
2. A flow chart showing each operation with a brief explanation of purpose and decision.
3. Copies of all forms received, processed or created, with sample entries.

III. Analyzing the Facts

In the preliminary survey, and in the fact gathering, objectives have been established. Reviewing and elaborating on these objectives are keys to good planning. Do this by reviewing the facts you've gathered against preliminary objectives. If this area is so broad that this can't easily be developed, then break down the operation into digestible portions. As always, the first step in problem solving is to organize the facts—and what is systems planning but complex problem solving?

During this phase there are many questions that must be answered. Some of these are:

Can the functions be re-assigned to reduce communications, storage delays and overlapping of work?

Is the function misplaced and being performed without full awareness of the results?

Should a new unit be established to increase specialization?

Is the span of control over-extended—supervision too thin?

Is the delegation of authority so limited as to handicap the work?

Can we eliminate unnecessary operations?

Can we reduce or simplify any of the present operations?

Can we combine two operations where some information is common?

From this analysis you should be able to answer:

1. What operations require the most time? Are they justified in taking this much time? Are they necessary? Is there any way they could be performed in less time?
2. Are too many personnel assigned to the same operation? Are the jobs spread too thin? Do they require an expensive coordination? Is there excessive handling and decision-making time?
3. Is there too much switching from job to job? Is there too much make ready time? Is it possible by re-grouping to reduce the unproductive time?

(continued on next page)

4. Are highly trained personnel performing unskilled tasks?
5. In what way are personnel scheduled to handle peak loads?
6. What is the work flow in each area? Is it the serial or assembly line plan; the parallel or concurrent handling plan; or, is it a combination of these two?

IV. Developing the Solution

To start, block diagram each step necessary to accomplish the objectives. Do not try to decide how each step is going to be done, whether manual or mechanical, but try to build in the necessary decision, in the proper sequence, with a work flow that will meet your processing time limit. This must then be tested back against the forms, the information by area, and your objectives. Now you should have a pretty general idea as to how the operation should be performed and should be able to mentally test various transactions step by step.

At this point, establish what value or what monies you can spend on performing each of these operations as compared to the present method. This is a big asset in helping you decide how each operation is to be done and how much it is worth to combine two operations or to rearrange your flow to reduce the work.

Some thought must now be given as to what machines are capable of doing the jobs as outlined. Here you require a more complete flow chart so that you can say we will receive the information in this form, we will process it this way, and our end product will be this.

All manual operations need not be eliminated just because you are using machines. If the manual phase is cheaper—include it. There will always be enough work for your equipment.

Now you are in a position to evaluate the proposal. Cost out your direct charges by applying volumes to your estimated times, and develop the number of people and machines.

At this point, depreciation, overhead charges, etc., unless drastically changed, should not be computed. These charges are time consuming to compute and, unless they become necessary to justify your recommendation, serve little purpose.

After arriving at this figure, compare it with the present operation. A very effective check is then to price the elements that have changed. This is a review of what you set out to achieve. It pinpoints areas that conceivably are weak because of excessive cost and it validates your direct costing. In this review, you can pick up and list your intangible benefits. It is preferrable not to assign a value to them but rather cite them as plus factors.

If the new system is so extensive that the cutover will require several steps you should now determine what sequence you will follow and why.

V. Preparing the Recommendation

Management will understand the proposal better if you can explain the difference between what is proposed and what is being done: what benefits this will give, and finally why these benefits are possible. The detail necessary to support this is what you have been accumulating and it should consist of your detail flow chart, the outlined procedures, card forms and report forms.

The most important concept in this report is to provide only the information necessary to justify the approval of your recommendation.

For every extra element you add to the comparison you are wasting time and money because they serve no purpose.

VI. Methods of Validating your Recommendation

It is very effective to go into a test operation. Do not go into parallel operation because then you are forced to go through extensive control to assure compatibility of the result. It is better to go into a laboratory arrangement where you are able to actually test what has to be done, validate the ability, the timing, and the cost of the new system. This can be compared to the debugging in a computer application.

In those cases where you are able to isolate a portion of the records and actually operate without having any serious effect on other operations, do so. However, in an accounts receivable operation you might want to run the test for a month to make sure your balance, the total of your transactions, your statements and your closing balances are in agreement with what is being done.

Caution—The more elaborate you make this pilot or dual operation, and the longer you continue it, the more expense you are building into your planning stage. However, a good testing program will save *5* to *10* times its cost because you are able to modify and improve your procedures equivalent to the first year of operation, and to prevent a major rupture in the function because of a miscalculation. This means that after conversion you are going to be one year ahead of schedule.

Experience shows that when the line personnel understand the new system they will further improve what you have created.

VII. Putting the Recommendation into Effect

Once you have approval and reached a decision it is a question of just putting all the pieces together and proving what you have recommended.

What is presented here is a re-statement of what each of you has heard many times. These steps can be simplified or further developed, depending on the complexity of what you are setting out to accomplish.

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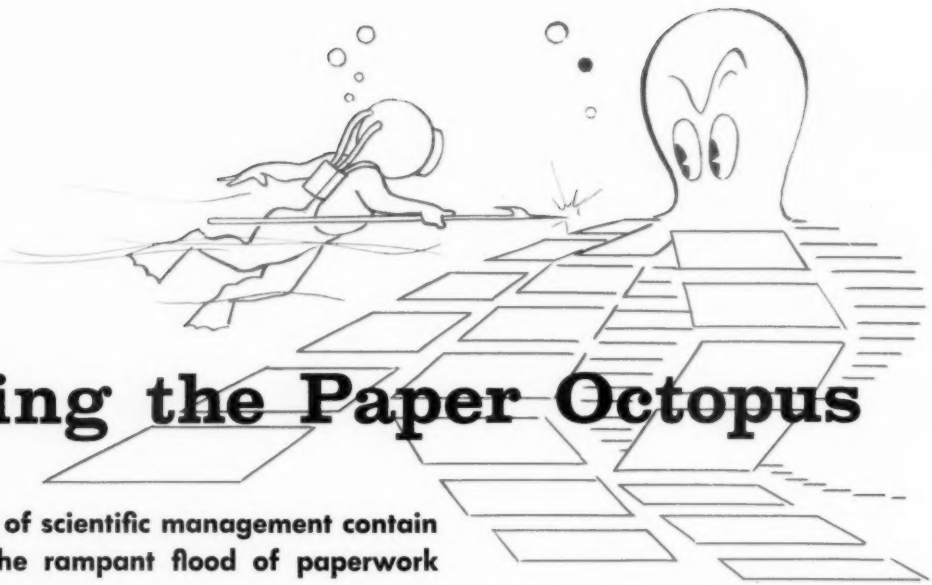


Beating the Paper Octopus

The principles of scientific management contain and control the rampant flood of paperwork

TO COPE WITH THE PAPER OCTOPUS and restrain it within manageable bounds the principles and techniques of systems and procedures were developed and applied as a promising Utopia for paperwork problems. As we enter the second decade of the second half of the twentieth century, the systems and procedures function has become an integral and indispensable part of scientific management. Specialization in systems and procedures has attained the status of a well-recognized and honored profession, and yet, the paper octopus keeps spreading and growing.

To find the answer, let us go back to Taylor and the principles of scientific management. Management means the planning, direction and control of an enterprise. Scientific method in management, as in any of the physical sciences, means defining the objective; compiling the facts relating to the objective; analyzing, appraising and interpreting these facts to develop conclusions; testing the conclusions; developing a plan of action; installing and implementing the plan; and taking necessary follow-up action to insure execution of the plan and achievement of the objective. In this formula the key factors are *objectives and pertinent facts.*

By Herman Limberg

Although the formula for scientific management is learned by rote it is much too frequently forgotten or disregarded in the actual practice of management. Thus, many business and governmental organizations continue to operate without clearly defined objectives, and to compile and compound mountains of facts to feed the paper octopus. Systems and procedures departments too often embark upon their studies without first determining and clarifying the objectives of the enterprise or activity before defining the objectives of the systems study.

The New Approach

To improve the management of the systems and procedures function and to enhance its effectiveness, it is necessary to bring it into focus within the total complex of the management of an enterprise. The purposes of systems and procedures are to *facilitate* the achievement of management's objectives, *prevent* failures and *correct* conditions which have caused such failures, through the efficient and economical processing of pertinent and significant data. As an obvious corollary, the work of the systems and procedures department should not be an end in itself. The "new approach" is management reporting or "management by objective." New York City's management reporting system represents the new approach in government and, because of the scope and diversity of

the City's operations, provides the guide-lines for effective application to business and industry.

Development of the present management reporting system of the City of New York was begun in October 1955 by a task force of the staff of the City Administrator. After intensive study and research, which encompassed reporting systems in private industry and government, the task force developed a pattern of reporting based on the following elements of the administrative sequence in planning, coordination, and control:

a. Clarification of the mission of each department and each of its components. The mission is the primary purpose for which a department or component was established; it is stated in broad, general terms.
b. Review and analysis of each budgeted program.
c. Development and adoption of program objectives, which are specific, measureable goals, to be achieved within a stated period of time.
d. Development and adoption of norms for measuring, reporting, and evaluating accomplishment of objectives.
e. Establishment and clarification of policies to govern program administration.
f. Review and evaluation of the plan of organization to determine its adequacy.
g. Review and evaluation of systems and procedures to determine their adequacy.
h. Periodic reporting of accomplishments in terms of stated objectives.
i. Review and evaluation of reports for analysis of variances from goals, identification of areas of possible improvements and determination of action required.
j. Follow-up.

Establishing the System

Introduction of the management reporting system was accomplished gradually. Five pilot departments (Fire, Hospitals, Personnel, Purchase and Sanitation) were selected for trial installations. The remaining departments were subsequently included as experience with the pilot departments indicated the practicality of the reporting system. Orientation sessions were conducted for departmental reporting coordinators and a continuing program of development, testing, appraisal and refinement was instituted.

It is important to note that although the planning and reporting forms and the basic concepts and approach have been standardized, each program of each department requires and is given individual attention. Operations research techniques, involving such specialties as management analysis, engineering, accounting, statistics, semantics, economics and the social sciences, are applied in the process of development. The result has been a standardized format adapted to accommodate the special requirements of each departmental program.

A memorandum of the review and follow-up, prepared by the management reporting section and the management liaison, is submitted to the First Deputy City Administrator, and a copy of the memorandum is sent to the departmental reporting officer. Where analysis of reported data indicates the need for a management survey, a recommendation to that effect is included in the memorandum of review. Depending on the scope, depth, and implications of the proposed survey, the recommendation may be directed to the department head, it may be pursued by the management liaison, or it may be assigned to the management analysis section of the City Administrator's Office.

In brief, each report is reviewed and channeled for such action as the reported data warrant. The basic concept was well expressed by the Committee on Statistical Program for The City of New York, which in a report published in 1956 stated that "action is the paramount reason for reporting — statistics are a by-product."

Emphasis on Scientific Management

During the past three years substantial progress has been made in the development and installation of the management reporting system. Foremost have been the inculcation and practice of the principles of scientific management. At all levels of management and administration, top down and bottom up, a planning consciousness and environment have been nurtured by the drive to establish specific program objectives. This first phase of the management reporting system — the most challenging — has imparted new meaning to the word "think" and has produced the stimulating sensation of a "mental cathartic." The second phase, determination and specification of the evaluation norms, has emphasized the importance of pertinent and significant facts, and has motivated an intensive review of record-keeping, reporting, and data processing. In the third phase, the interpretation of the norm data to measure accomplishment of objectives and to identify problem areas requiring study, the reported information has been tested for validity and pertinence.

In these prime elements of the "new approach" — the management reporting system — the essential role of the systems and procedures function is sharply focused: facilitating the compilation and flow of required data, preventing deviations from planned objectives, and correcting conditions resulting in failures to achieve objectives. Fulfillment

(continued on next page)

of this role necessitates integration of the systems and procedures function into the total management process in a continuing cycle rather than on a crash or "fire-fighting" basis.

Among the many benefits thus far produced the implications for systems and procedures are obvious. These benefits include:

Benefits of Management Reporting

Clarification and implementation of accountability at every level.

Improvement of vertical and horizontal coordination and communication within and among departments.

Motivation of a continuing management audit of policies, organization, systems and procedures.

Stimulation of greater line appreciation of and interest in management and systems analysis by promoting "bottom-up" participation.

Standardization of reporting on similar or related functions.

Simplification and improvement of record-keeping and reporting procedures.

Development of bases for cost analyses and control.

Development and use of a classification guide for planning preventive maintenance and reporting the physical condition of plant and equipment.

Facilitation of preparation of reports.

Facilitation of planning and development of integrated data processing systems and determination of feasibility of mechanization and automation.

The greatest stimulus for further development and refinement of the management reporting system has been provided by its acceptance and active support by all levels of the participating departments, as well as by the important benefits already derived. The final achievement will be the complete integration of management reporting and the systems and procedures function into the administrative fabric of the municipal government. Henri Fayol, an authority on management, may have envisioned New York City's management reporting system and its ultimate goal when he wrote:

"Compiling the annual plan is always a delicate operation and especially lengthy and laborious when done for the first time, but each repetition brings some simplification and when the plan has become a habit, the toil and difficulties are largely reduced. Conversely, the interest it offers increases. The attention demanded for executing the plan, the indispensable comparison between predicted and actual facts, the recognition of mistakes made and successes attained, the search for means of repeating one and avoiding the other—all go to make the new plan a work of increasing interest and increasing usefulness."

A great deal more remains to be done, but the system has already shown its potential as an effective means of curbing the paper octopus, of imparting new significance to the concepts of "data processing" and of upgrading the systems and procedures function. Perhaps most important of all, management reporting has set in motion the practical application of the principles of scientific management.

■ ■ ■

CALENDAR of Coming Events

1960

Jan. 10-13	International Business Machines Corporation's 100% Club Waldorf-Astoria and Commodore Hotels, New York, N. Y.
Jan. 17-20	The Service Bureau Corporation's 100% Club Shoreham Hotel, Washington, D. C.
Feb. 2-4	Instrument Society of America One of three scheduled 1960 Instrument- Automation Conferences and Exhibits, Houston, Texas
Feb. 25-26	The Univac Users Association semi-annual meeting Greenbriar Hotel, White Sulphur Springs, W. Va.
March 7-9	Data Processing Organization A. M. A. Seminar, New York, N. Y.
March 23-25	Data Processing: Electronics, A. M. A. Workshop on the Input Bottleneck, New York, N. Y.
March 24-25	1960 Northeastern Divisional Data Processing and Computer Conference and Business Show, New York, N. Y.
April 20-22	Data Processing: Punched Card A. M. A. Workshop on Organization and Management, New York, N. Y.

SYSTEMS PLANNING

Computers and computer systems are highly specialized. Professional consultants offer one avenue of assistance in systems planning to secure the rewards of automation.

SOME OBSERVERS have charged that computers and other electronic data processing machinery have, so far, caused more problems for businessmen than they have solved. Yet businessmen intuitively turn to equipment manufacturers and their products for help, risking large sums of money and time on the eventual outcome. Why is this so, and what is the prospect for a payoff? How can management make sure that the payoff will be achieved?

Why Computers Are Favored

Businessmen anticipate a payoff from mechanizing clerical operations because they perceive a parallel with the phenomenal results American business has achieved in the past thirty years through mechanization of manual manufacturing operations. They conclude and rightly so, that similar treatment of clerical operations will bring similar returns.

Reasons for Disappointment

However, failure to appreciate how differently the new machines perform from their relatives of the older generation has caused confusion, disappointment and frustration among many users, and has led others to question whether the new machines are capable of performing as advertised. These new machines have been treated as though they were merely an extension in size and speed of earlier electric accounting machines, whereas in fact they are quite different in nature as well as capacity. The older machines dealt with only one application at a time, and most of the new machines have been put to work in the same way. But the new machines have the capability and capacity for serving a number of functions simultaneously, and not necessarily within one department. Therefore, the economical use of these machines must be planned on an integrated "systems" basis rather than on the traditional "applications" basis. Both manufacturers and users of the equipment have shared in the delay in reaching this understanding and putting it into effect.

The Way Out

Recently we have observed an encouraging trend toward taking a more analytical and systematic approach in planning data processing machine installations. This type of skillful systems analysis and advance planning of requirements, often best handled by a competent professional service organization, is enabling progressive managements to minimize the delays, false starts, disappointments and excessive expenditures of executive time which are all too frequent in applying modern office machines to business operations.

Outside Help Sought

While some companies still prefer to work out their own plans, the trend now is to go outside for help with the non-recurring job of establishing the long range plan for mechanization of clerical functions. Outside help is available from three sources: the equipment manufacturers, accounting and auditing firms, and management consultants.

(continued on next page)

By Kevin McLaughlin

Equipment Makers

The equipment manufacturers have traditionally furnished excellent assistance in planning and operating punched card installations. The amount of planning required in connection with today's electronic data processing systems, however, is so much greater that it is unreasonable to expect this assistance to be rendered without charge by the manufacturers of equipment. Some of them, in fact, already charge a fee for this service comparable to that of service organizations. Others have taken the position that they prefer to see this service rendered by professional consultants.

Accounting or Auditing Firms

The accounting or auditing firm was the first outside professional recourse to which the businessman turned for help in planning data processing installations. This was logical enough, because the data processing installation originally served the needs of the accounting functions almost exclusively, and the controller was accustomed to seeking advice from his external auditor or certified public accountant.

General Management Consultants

More recently, however, the advice of general management consulting firms competent not only in accounting, controls and data processing, but also in all other major business functions, has been increasingly favored. The arrival of the newer electronic devices has greatly extended the coverage of profitable installations. There now appears to be no area of management that cannot benefit from well planned and integrated electronic data processing. In essence, no managerial function can afford *not* to examine the planning, control and service opportunities available for enhancing its ability to contribute to overall profits and growth. A data processing installation can now be used to serve other than accounting functions of the business, such as production scheduling and control, inventory control and maintenance, sales analysis and the like — in short, the production of complete information for all areas of management decision making.

Overall Systems Study Recommended

Many students of business management, both theoretical and practical, believe that an initial overall systems development plan or *"blueprint"* covering the whole company is absolutely essential to achieve a satisfactory level of success in the use of an electronic data processing installation. The most profitable areas for initial mechanization can then be recognized, and any possible effects on other areas provided for in advance.

Objectives of Systems Planning

Full mechanization of clerical functions should not be attempted for its own sake; rather, the appropriate balance between people and machines, making the most effective use of both, must be established. The true final objective of systems planning is to provide the information needed to guide executive actions toward improved profits and growth. A company-wide study, made preferably prior to installation but just as profitably at any later time, puts everything into proper perspective.

Standards and Criteria for Overall Study

Regardless of who directs the development of an overall systems program, it is esential that the following standards and criteria be observed:

- *A clear picture of the interrelated data communications requirements of all organization units must be presented. This aids in eliminating duplications, unnecessary overlapping and reconciliations of apparently contradictory figures.*
- *A uniform format for expressing the detailed requirements of data communication documents and procedures must be provided. In the multidivisional company, this facilitates efficient interdivisional data exchanges and consolidations.*
- *Newly developed concepts and methods for modernizing and improving the information exchange system of the entire company should be introduced. A creative approach will pay off handsomely.*
- *A high level of objectivity must be maintained in selecting, from among the various available makes, that office equipment best suited to meet the company's needs.*
- *A* "blueprint" *and timetable for bringing the system and its components from their present state to the ideal ultimate condition must be provided. The study must be so conceived that it can be advantageously made at any stage in the development or evolution of a business data processing system, ranging from a completely manual operation to the most advanced, successfully operating, electronic installation.*

Client Personnel Used

Incidentally, when an outside service organization is used, consulting fees may be minimized by using skilled client employees, when available, or by training client employees to perform the detailed work involved in making the study. This has the added advantage of equipping client personnel with a universal basis for future revisions and updating of clerical operations as the company grows and circumstances change.

Advantages of "Systems" Approach

The use of electronic data processing machines in a *"systems"* context, skillfully planned and operated, promises the following advantages which lead

directly to maximizing profits and reducing and controlling costs:

- *Vastly improved control over the materials, physical facilities, working capital and human effort used in operations, with consequent economies.*
- *Routine data analysis and review done by the data processing machine, rather than by management. The "exception principle" of reporting is exploited to the ultimate, and management's time is freed for attention to the profitable functions of planning, decision making and personnel supervision.*
- *System features and details forced into better configurations, and the random growth of uneconomical practices prevented.*
- *Improved customer relations, because the company is enabled to fulfill its commitments more rigorously.*
- *Relatively small companies offered the economies and other advantages provided by data processing equipment which they could not otherwise afford.*

Areas of Opportunity

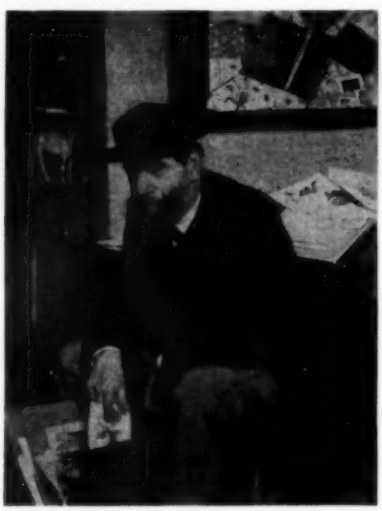
To sum up: there is, in our opinion, no single field of business management today that offers greater opportunities for profit improvement than those available through skillful use of electronic data processing equipment for scheduling and control of current operations throughout the business.

Help Needed

There is likewise, we believe, no field in which the assistance of competent service organizations is more valuable and, in fact, necessary. ■

AUTOMATION ARTOON

Degas: The Print Collector



"YOU SAY YOU'RE SATISFIED WITH YOUR PRESENT FORMS SUPPLIER?"

Seen in Print

USE OF PUNCHED CARDS IN COMPILING STANDARD COSTS by E. R. Cohan, Management Controls, August 1959.

More and more companies are recognizing the desirability of utilizing standard costs in their cost accounting practices. The three major reasons for this trend are:

1. A lesser amount of clerical effort is required.

2. Faster periodic closings and preparation of financial statements are possible.

3. Management controls reports can be developed which identify areas where corrective measures are needed.

It must be recognized that standard costs are based on an assumed set of conditions and the farther actual conditions deviate from the assumed, the greater will be the disparity between actual and standard costs.

Conversion to punched cards makes only one demand — a compatible parts numbering *(preferably digital)* scheme to facilitate the sorting, collating, and other operations. Subsequent processing steps are all mechanically performed. The built-in checking features of the equipment, plus controls which are established to meet individual conditions, assure accuracy of the compiled costs.

DATA PROCESSING — PRESENT AND FUTURE by Felix Kaufman, American Business, October 1959.

Two intensifying and interrelated problems confront American management today. One is the growing mountain of paperwork. The other problem is the need for more reliable data to make managerial decisions more quickly.

Current systems are characterized by specialization. The introduction of electronic systems shifts the emphasis from specialization to versatility. Versatility therefore replaces specialization; internal communication and coordination become largely automatic.

Looking at all of our business activity, it is apparent that duplications and inefficiencies exist throughout the system because of opposition toward standardization and the use of techniques which emphasize integration rather than separation. Some of these problems exist because of higher-priority considerations. *(We could hardly promote mergers and consolidations because it would improve standardization in information handling!)*

(continued on next page)

NOTABLE QUOTES

"Yes, we've been outcasts. Today, we are prodigals. We have returned to take our rightful places. Just what are those places? Can we both fit in?" Joseph T. Berthelet, "The Systems Analyst and the Tab Man," *Journal of Machine Accounting*, October, 1959.

"Automation and obsolescence should be viewed more as a measure of man's progress and less as a cause for concern. Automation helps raise the status of human dignity." Aarre K. Lahti, Professor of Design, University of Michigan, *U. of M. News Release*, October, 1959.

"The talented systems man wants, above all, some appreciation for a job well done . . . and he appreciates a management that knows the difference." Leslie Matthies, *Systemation*, November 15, 1959.

"The decline and fall of this white-collar emperor was slow, though gradual, until the full impact of automation hit the office." Bernard Heinrich, "The Office Manager — An Automation Casualty," *Management and Business Automation*, November, 1959.

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SEEN IN PRINT *(continued)*

BUSINESS MACHINE EXECUTIVES RATE HIGH COMPENSATION by D. Ronald Daniel, Management and Business Automation, October 1959.

A relatively high level of top-management compensation in business machines companies dramatically points to the fast-paced, dynamic nature of the business in which effective research and product innovation, coupled with aggressive marketing, are prerequisites for success. But second-echelon executives in business machines companies do not fare as well, on a percentage basis, as their counterparts in other industries.

The data given clearly marks the business machines industry as one of the highest paying fields. This was particularly true in 1958, when office automation continued its explosive growth while the recession took its toll in many other industries.

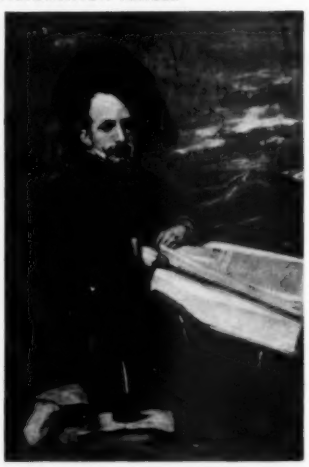
MANAGEMENT ACTION AND PLANNING FOR SUCCESSFUL EDP INSTALLATION by Dr. Michael Shegda, Journal of Machine Accounting, September 1959.

The potentials of electronic data processing systems have been recognized by management in business, industry and government as evidenced by the spectacular growth in the number of installations since 1954, the year of the first business application.

Many managements find that they are spending more to operate with computers, without any significant "intangible" benefits to compensate for the increased costs. One of the major reasons for disappointments and failures in the EDP field has been insufficient planning, stemming from lack of direction by top management. The EDP program should have available the advice and participation of people who have had extensive experience in the field.

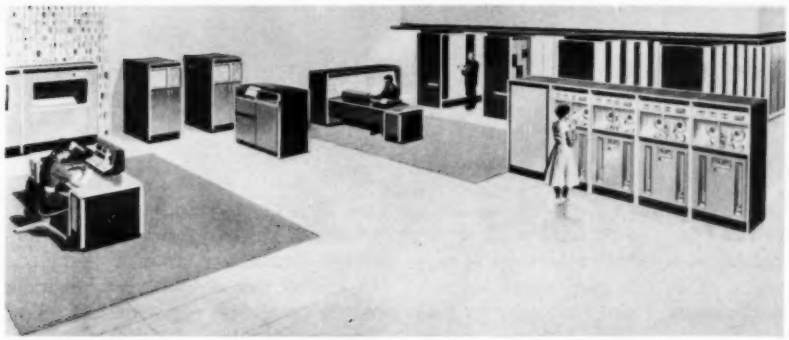
AUTOMATION ARToon

VELASQUEZ — Court Dwarf



"HERE IT IS JANUARY AND YOU'RE GIVING ME OUR SEPTEMBER SALES ANALYSIS!"

PRODUCTS & SERVICES



LARGE SCALE SYSTEM

The Univac Larc Solid-State computer is a large-scale, "solid-state" digital computing system. It was originally designed and constructed by Remington Rand for the Atomic Energy Commission for their use at Livermore, California.

It is geared to handle a range of applications extending from the tracking of a missile to the preparation of a company's payroll.

The Univac Larc, according to Remington Rand, can perform 250,000 additions or subtractions of 12-digit decimal numbers per second. The rate of speed will depend on the problems being run.

Data processing and scientific problems can be performed concurrently by the Larc. It is estimated that the preparation of payroll and labor distribution for a manufacturing company employing 15,000 employees can now be accomplished in a total computer time of some 15 hours per month. And while the payroll is being run, the Larc can be simultaneously solving separate problems.

Magnetic core units store up to 97,500 words, while drums store up to 6,000,000 words. These drums make it possible to process information at speeds up to 33,000 12-digit words per second for each drum. These are supplemented by the storage capacity of up to 40 magnetic tape servos.

The Larc consists of a main computer unit which works in conjunction with a second computer, called a processor. This allows the main computer to devote the major part of its time to the computing of problems.

The processor operates on its own program and upon signals periodically received from the main computing unit. The design of the processor calls for individual synchronizers to control input and output operations. This makes it possible to have flexibility in the selection of input-output devices to be used. Data can be transferred at the rate of 400,000 decimal digits per second.

For increased computing capacity, a second computing unit may be added. Except for certain inter-communication facilities, the computing unit and the input-output processor operate independently.

A typical installation comprises one computing unit, one processor, eight core memory units, twelve drum files, four tape units, and operator and engineer consoles.

The term "solid-state" refers to the fact that a variety of devices such as Ferractors, transistors and magnetic cores are used.

A programming system originated by Remington Rand, known as Flow-Matic coding, which uses English words and phrases instead of mathematical symbols, will be adapted for use with the Larc. The new computer will sell at upwards of six million dollars, and will rent from $135,000 a month.

"FEE PLAN"

The National Cash Register Company announces the release of a new model of the Post-Tronic designed to post "fee plan" special checking accounts. The new model of NCR's electronic posting machine posts to the statement ledger record and the journal the instant after a check or deposit is posted.

A four-position "Fee Program Selector" located to the left of the amount keyboard allows the Post-Tronic to:

1. Post the fee after each check posting;

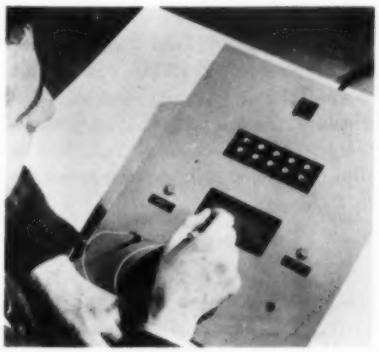
2. Post the fee after each check or deposit posting;

3. Operate as a standard Post-Tronic, with no fee posting.

4. Post a service charge fee.

The predetermined fee charged for checks and deposits, built into the machine, may be changed to any two-digit amount. Similarly, the built-in service charge may be changed to any three-digit amount.

Separate totals are provided by the Post-Tronic for fees, fee corrections, good new balances, over-draft new balances, checks, check corrections, deposits and deposit corrections. When a check correction or deposit correction is posted, the machine posts a fee correction.



MACHINE "READS" HANDWRITING

A device that reads handwritten words has been built at Bell Telephone Laboratories. It has a ten-

word vocabulary — "zero" through "nine" spelled out.

The handwriting reader was invented to demonstrate methods which might eventually be applied in machines designed to read a wider variety of material.

To use the experimental handwriting reader, the writer moves a metal stylus over a special surface as if he were writing with a pen or pencil. Then, when he touches an "identify" button with the stylus, a light appears beside the numeral corresponding to the word he has just written.

The device is believed to be the first which actually reads cursive script — connected handwritten material — despite variations in individual style. It also explores machine reading by entire words rather than letter-by-letter. It does this by picking out features of the over-all shape of the word. These include the length of the word, the dotting of "i's" and the number and position of vertically extended letters such as "h" and "g."

The handwriting reader has one minor constraint. The user must write within limits on the special surface. Up-and-down movements of the writing cause electrical connections to be made with the metal strips in sequence. The sequence and number of connections tell the work-reading device which of the ten words has been written.

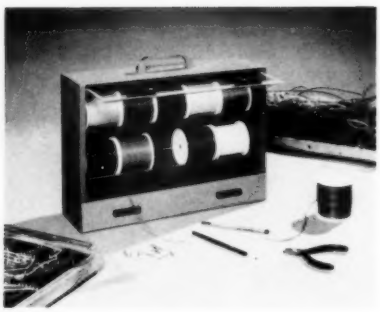
Although the device has enough flexibility to recognize most individual styles of cursive writing, it has limitations. The writer must not print the words nor lift the stylus between letters. He must dot his "i's" punctiliously in the words "five," "six," and "nine." He must play square with the machine.

For a primary-grader among machines the handwriting reader has scored 97 percent in a test of 1,000 words written by 20 persons. Most of the three percent error rate can be eliminated by minor improvements.

TELEPUNCH UNIT

Systematics, Inc., subsidiary of General Transistor Corporation, announced a new series of intercouplers which provide direct card-to-card data transmission over existing wire systems.

Called "TELEPUNCH," the units interconnect Teletypewriters with card punches. One unit senses the



punched data and activates the transmitter, the other activates a card punch as data is received at the second station. Hard copy may or may not be produced simultaneously at either end as programming requirements dictate. Alphanumeric data can be handled at speeds up to 100 words per minute. Variable and fixed data are transmitted under program card control.

Carriage return, line feed, end of transmission, station select, etc., can be transmitted. These same codes can be selectively recognized or ignored by the receiving unit.

The series has been installed in two industrial concerns in the nation and several additional orders are presently in production.

PUNCHED CARD READER

The Elliott punched card reader reads standard 80 column cards at speeds up to 400 cards a minute, giving a reading rate of 533 characters per second. It reads the cards either face up or face down and provides column identification. The reader weighs about 62 lbs. and is approximately 22 x 22 x 12 inches high. Sensing takes place during the ejection motion and is achieved photoelectrically by means of twelve photo transistors over which the card passes immediately before passing through the ejection rollers. Elliott Addressing Machine Co., Cambridge 39, Mass.

CONTROL PANEL WIRING SYSTEM

A new approach to control panel wiring is now being offered by Clarkson Press, Inc.

Called GC PanelLOGIC, the system contains the tools and materials needed for any type of board wiring. They come either in a portable kit or separately as required. With GC PanelLOGIC wires are cut to exact lengths. Ten different wire colors allow for color coding. Wiring can be traced visually without removing wires from the panel or the panel from the machine. The kit costs less than $100.

For information, write to Clarkson Press, Inc., 189 Van Rensselaer St., Buffalo 10, N. Y.

1604 COMPUTER

Control Data Corporation's Computer Division, Minneapolis, Minnesota, announced its new computer, the Model 1604. The 1604 is a transistorized, large-scale, stored-program, general-purpose, digital computer.

The 1604 computer has input-output facilities and, by means of its related 1605 Adapter, is capable of utilizing standard input-output equipment manufactured by other companies. Model 1607 magnetic tape systems can provide up to 24 magnetic tape transports, producing tapes compatible with those produced by the equipments of other companies.

The main cabinet of a 1604 contains all arithmetic and control sections, and the magnetic core storage. The following is a summary of the 1604:

solid state
32,768 48-bit words of magnetic core storage
parallel mode of operation
single address logic, two instructions per 48-bit word
six index registers
indirect addressing
program interrupt
input-output facilities.

In the 1604 computer, input-output operations are carried out independently of the main computer program. When transmission of data is required, the main computer program is used only to initiate a cycle which

buffers data to and from the computer memory. The main computer program then continues while the actual buffering of data is carried out.

Input – Output

The input-output section of the 1604 contains the facility for several modes of communication. For normal exchange of data with peripheral equipment, independent control is provided for the transfer of data via three input and three output channels asynchronously with the main computer program. For high-speed communication, one input transfer channel and one output transfer channel are provided so that two or more 1604's can communicate with each other. Communication control is performed by the external function instruction. In addition, the interrupt feature provides requests from peripheral equipment to the computer.

The internal memory of the 1604 is a large-capacity magnetic core storage system providing high-speed, non-volatile, random-access storage for 32,768 48-bit words. One 48-bit word may contain either a data word or two instructions. The access time is 2.2 microseconds. The 1604 instruction repertoire contains 62 instructions which expand into sub-instructions.

Optional Equipment

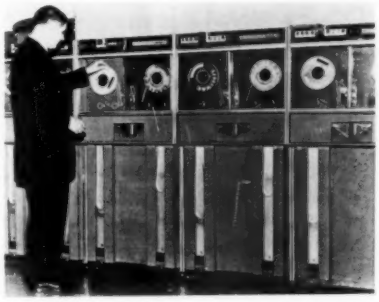
In addition to the standard 1604 console with its display panel (translated contents of all operational registers are displayed in Arabic numerals — octal), typewriter, and paper tape reader and punch, Control Data offers as optional equipment the Model 1607 Magnetic Tape System and the Model 1605 Adapter. A number of 1607 Magnetic Tape Systems can be attached to a 1604 computer. Simultaneously among these 1607's three tape handlers can be reading and three can be writing.

The Control Data Model 1605 Adapter permits communication between the 1604 computer and the following IBM peripheral equipment: 714 Card Reader, 727 Magnetic Tape Units, 717 Line Printer, and 722 Card Punch. Each 1605 Adapter can be connected to any of the three buffer input channels and three buffer output channels, and each 1605 is independently addressable.

Control Data Corporation, jointly with its 1604 computer customers, has organized a cooperative project called CO-OP. Through pooling of efforts by means of CO-OP, the utilization of 1604 computers is maximized. CO-OP is directed by officers elected from customers' staff personnel. The purpose of this organization is to achieve maximum interchange of mutually beneficial programming information, and to provide a medium for the interchange of computer information of general interest concerning equipment, techniques and procedures.

Control Data Corporation reports it has received orders for five 1604's which are in various stages of production. The first full scale prototype of the 1604 was completed in April, 1959 and the first production computer will be delivered in the near future to the U. S. Navy Postgraduate School at Monterey, Calif.

The company is building a 1604 for its own computing center at Minneapolis which will be used primarily for solving engineering problems.

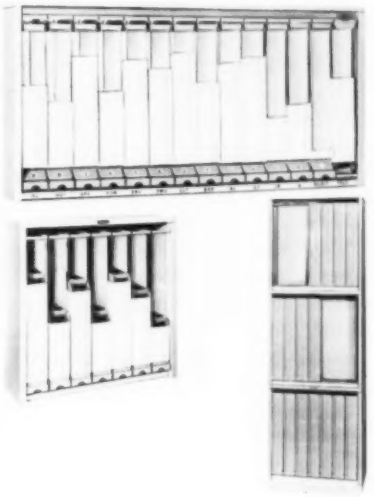


MAGNETIC TAPE UNITS

Magnetic tape has now been adapted to Univac "solid-state" computers, the Remington Rand Division of Sperry Rand Corp. announced. The company last year introduced the solid state computer system in commercial operation.

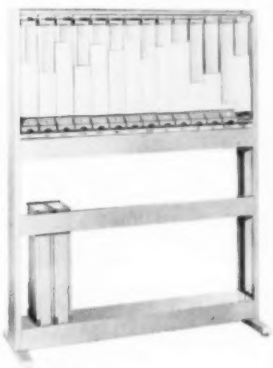
Known as the Univac Solid-State Magnetic Tape system, the equipment will be available with a combined tape and punched card input and output unit. Two models will be offered: one using 80-column punched cards, the other using 90-column cards, and both using tape. Initial delivery will be made within six months.

The system comprises a central processor, magnetic tape "Uniservos," a tape synchronizer, a card reader, a read-punch unit and a high speed printer. A typical system will rent for $9,750 a month, or may be purchased at $477,500.



DIEBOLD ACCESSORY EQUIPMENT

Diebold, Inc. has designed its *vertical storage files* to provide storage capacity in space situations. Available in two sizes to accommodate seven vertical processing trays (21,000 card capacity) or fourteen trays (42,000 card capacity), Diebold vertical storage units can be bolted together to form storage facilities. Both seven and fourteen tray units can be combined to form lengths in multiples of 26 inches. Each file unit has a label holder so that tray location is identified at all times.



The Diebold *vertical processing sorter rack* holds fourteen vertical processing trays — one feed and thirteen receiving — while the stand provides storage for empty trays. The Diebold sorter rack and stand

can be positioned directly behind the sorter to provide easy reach for the operator.

Four different installation choices are available. One of these has the sorter rack centrally mounted on stand facing front of sorter. A variation provides for two racks placed in back-to-back position for location between machines. A third provides for single rack on back of stand for positioning against a wall and a fourth installation uses double sorter racks and stands for positioning between machines.

The feature of this steel modular reference file is its modular design which permits assembly of individual units to any desired height and/or width. Individual file units lock together side-to-side, top-to-bottom and back-to-back without special tools or extra materials. These modular reference units serve as room dividers when erected to counter height or serve as point-of-use reference stations when assembled to desk height, or they can be erected as high as the ceiling.

Modular files are also available with casters for moving between processing stations. For additional information, write Carl Shryock, Diebold, Inc., Canton 2, Ohio.

NCR'S NEW CLASS ACCOUNTING MACHINE

Twenty-one separate totals are available in The National Cash Register Company's new Class 33 accounting machine. Automatic credit balances are obtained from all 21 totals; the machine may be programmed to affect as many as four totals in one operation; and the depression of a single key totals or sub-totals all 21 totals in sequence, making possible a daily statement of posting.

The Class 33 machine also has other features. The "33" protects the amounts on checks by printing the dollar sign ($) immediately to the left of the highest dollar amount. The machine will also determine if the operator has made an incorrect pickup of an old balance, and if so will eliminate it. A single-key reverse entry control provides instant correction of erroneous postings and reversal of accounting entries without need for changing program or determining which totals must be affected.

The Class 33 has removable program bars which may be altered to meet changing requirements of particular accounting jobs.

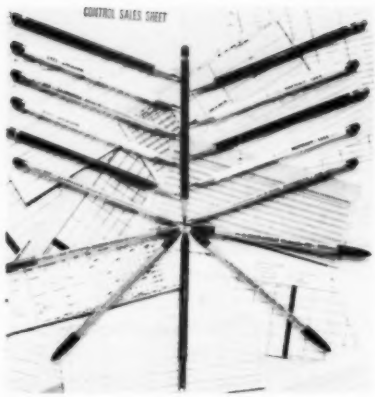
A built-in electric typewriter with 72 characters facilitates description of entries and simplifies auditing. The Class 33 is also available without a typewriter. Further information available from Product Information, The National Cash Register Company, Dayton 9, Ohio.

PRINTING CALCULATOR

Restyling and functional innovations in their Automatic Printing Calculator model were announced by the Victor Adding Machine Co.

Available with a listing capacity of ten digits and eleven capacity grand total, the Victor calculator contains as standard: credit balance, constant total and total transfer, Select - O - Matic totaling and one master control key to switch into the desired mathematical function, add and subtract, multiply or divide.

The Calculator costs $635. Delivery is promised within 30 days of order. For further information write: Victor Adding Machine Co., Department APC-147, 3900 N. Rockwell St., Chicago 18, Ill.



THE "POINT" OF AUTOMATION

Writing instruments designed for the age of office automation are being marketed by the Eberhard Faber Pencil Co., Crestwood, Wilkes-Barre, Pa. Both special pencils and ball pens are being made available for electronic data processing mark-sense cards.

Several of the writing instruments are designed for use with the brand-name duplicating and copying machines.

The new line has eleven pencils and five ball pens of various colors and writing densities. They include the Blank-Pring and Fotorite pens, and Litho-Print, Fotorite and Contak pencils.

RCA SERVICE COMPANY

The establishment of a separate department of the RCA Service Company to handle installation and servicing of RCA's new "501" electronic data processing equipment was announced by Donald H. Kunsman, President. The new activity, known as the Electronic Data Processing Services, will operate under the direction of G. W. Pfister, Vice President, Commercial Services.

NEW HIGH-SPEED PHOTOELECTRIC TAPE READER

Digitronics Corporation, Albertson, L. I., N. Y., had the initial showing of a new DYKOR perforated tape reader at the Eastern Joint Computer Conference held in Boston during December.

Conference participants saw the new 4500 series reader operating at 1000 characters per second and stopping *before* the next character. The stop time is less than 0.5 milliseconds.

The ability to handle 5, 6, 7, or 8

channel tape and use either strips or reels of tape on the same machine was demonstrated.

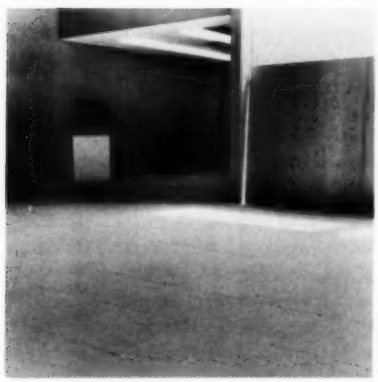
TYPEWRITER RIBBONS

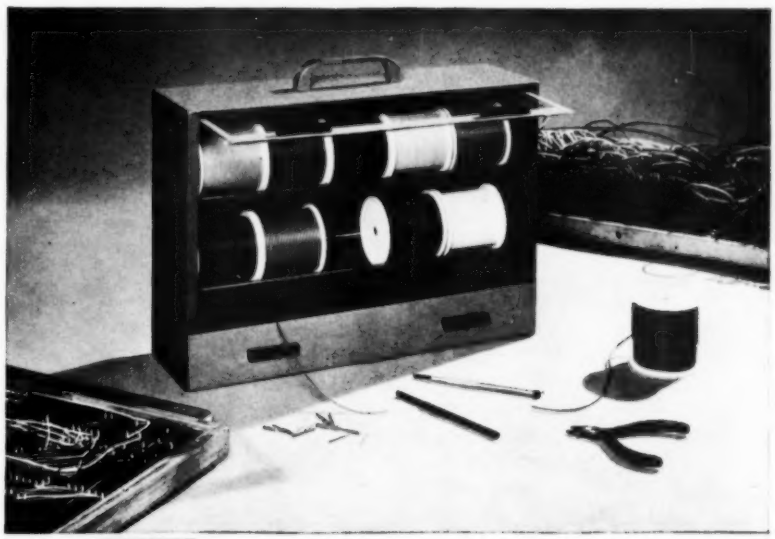
Remington electric typewriters are now equipped with both fabric ribbons and carbon ribbons as standard accessories. Previously, carbon ribbon attachments have been available only at extra cost.

The new two-ribbon feature makes it possible for the Remington electric to serve as an all-purpose machine, functioning equally in the preparation of distinctive correspondence, in photo-offset work, and in the preparation of multiple copy work.

WEBCOM II FLOORING

The new Webcom II flooring, manufactured by Weber Showcase & Fixture Co. of Los Angeles, is reported to give more flexibility than previously available in any flooring designed for computers and data processing machines. Precision rolled shapes mean no twist and greater strength. The flooring is also lighter, earthquake proof, and has more space underneath. It has been completely tested and signed by an independent testing organization. The new product has just been installed in the Los Angeles plant of the National Cash Register Co. Electronics Division.





GC PANELLOGIC

...an all-new approach to Control Panel Wiring

This GC panelLOGIC kit has been scientifically developed to facilitate your work and lower costs in wiring control panels. It will produce neater panels that are more compact and easier to handle and store. Terminals will be securely affixed, yet readily removable. Circuits will be extremely simple to check and trace.

You know from experience how tangled and bulky a control panel can be when wired by old fashioned methods.

By contrast, panelLOGIC is neat with taut wires that you custom cut to exact lengths. Each card field or machine function can be color coded for easy visual tracing. Wired panels are more compact permitting each rack in the storage cabinet to be used, and eliminating accidental wire removal. 2, 3, 4 or 5 way color-coded split wires can be made in any length. Circuitry checks through terminal posts can be made without removing wires from panel or panel from machines.

You'll find that wiring with panelLOGIC is quick and easy. Once you put panelLOGIC in regular use, we know you'll agree with other users that you'd never go back to the old way of wiring control panels.

SEND FOR FREE BROCHURE!

A new full color brochure describing panelLOGIC tools and materials and showing in detail how to wire panelLOGICLY is yours for the asking. For your FREE copy, send the coupon today!

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Please rush my free copy of the GC panelLOGIC brochure titled: "Introducing an all-new approach to Control Panel Wiring".

NAME_____ TITLE_____

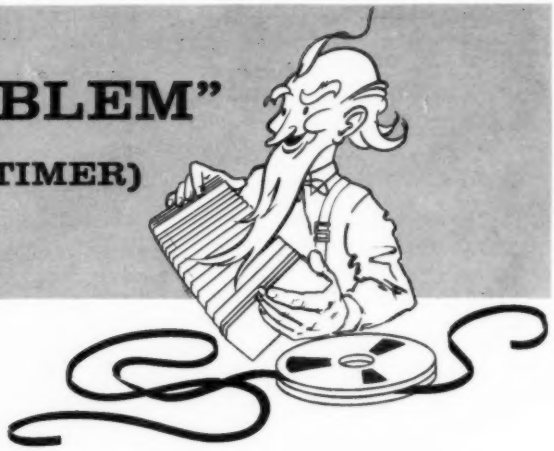
Company Name_____

STREET_____

CITY_____ ZONE_____ STATE_____

"I'VE GOT A PROBLEM"

(with Advice from the OLD TIMER)



Keep this column *alive.* Send your data processing problems or comments to Data Processing Old Timer, 956 Maccabees Building, Detroit 2, Michigan.

Sorry, he cannot answer these personally but all possible will be answered in this column.

Dear Old Timer:

There is a need for lists of books, periodicals, etc., which would enable data processing personnel to obtain sufficient knowledge for advancement. I am not speaking here of technical material on data processing itself but rather on management type material.

Comments:

Your Old Timer is glad to see someone recognize the data processing manager's need to understand management better. Most often we hear complaints that management does not properly understand the data processing manager's role but it is seldom that the manager recognizes the necessity for him to be fully aware of the management position if he is to gain advancement.

If you are anxious to get started, here are two excellent books, both published by the American Management Association, 1515 Broadway, New York 36, N. Y. Developing Executive Skills. *This is just off the press. It sells for $9.00. The other one,* Defining the Manager's Job, *also $9.00. These books should be in your company library.*

A good management periodical (one of many) is "Management Methods." It contains many good case histories giving insight into complete management of companies. 22 West Putnam, Greenwich, Conn., $5.00 per year.

Dear Old Timer:

Publications and associations should keep in mind that the majority of companies do not use computer systems and although we must keep abreast of new developments we benefit greatly from articles on methods, applications, and technical helps for the small to medium size data processing installations. Do you agree with us or have you too gone "computer happy"?

Comments:

Wherever I go I get the same story. For management to be completely spellbound by the "magic" of high speed computer systems is somewhat understandable but for the data processing field itself to have become so overcome is disappointing. Of course, we too are enthusiastic about the great developments in electronic systems during the past few years but to many companies the use of this equipment must be merely a dream while they struggle to compete using essentially the same equipment they had in pre-computer days. It's up to you to keep demanding the kind of practical help you need on basic systems from manufacturers, publications and associations.

Dear Old Timer:

We need more help on systems work. Forms manufacturers should publish manuals on forms improvement. Punched card manufacturers could supply more formalized aids, scheduling sheets, job description manual forms, productivity charts, etc. Is any help coming on this?

Comments:

To be completely accurate and unbiased, a forms improvement manual should be developed by an individual concern, not limited by a particular forms company's specialties. Perhaps one of our readers will find himself capable of undertaking this worthy task.

Regarding the more formalized aids in scheduling, productivity charts, etc., you might want to investigate the new procedural system for data processing operations called Pro-Forms by writing the Pro-Forms Company, P. O. Box 715, San Francisco 1, Calif. We have not had the opportunity of examining the kit itself but the descriptive literature we have received indicates that this is an exceptionally efficient method of organizing your complete data processing operations so that all procedures are at all times written up and available for reference. This is more than a book or manual — rather a complete kit of forms and supplies, including even filing cabinets. It is limited, however, to IBM equipment.

Dear Old Timer:

There are seldom reports of *failures* in data processing set-ups and why. How about publishing some of this realistic information along with the brighter side?

Comments:

Your Old Timer knows of quite a few along with the majority that are highly successful. But let's let you readers give us the benefit of your experience on this. Tell us about your *failures. — We'll print them!* ■

PEOPLE AND PLACES

C. E. I. R., INC.

Dr. HERBERT R. J. GROSCH, formerly manager of Space Programs—Advanced Programming for IBM's Military Products Division, has joined C.E.I.R., Inc. as Director of Corporate Programs and Planning.

Dr. Grosch, a national authority on scientific and commercial applications of high-speed computers, has been in charge of organizing and opening eight major computing and data processing centers since 1945. In addition to heading the Vanguard Computing Center in Washington, D. C., Dr. Grosch directed computing for the Watson Scientific Computing Laboratory and the Washington Technical Computing Bureau of IBM. He was head of the logical design research group for the WHIRLWIND II Computer at M.I.T. and was Manager of Applications for General Electric Company's Computer Department.

A past president of the American Rocket Society, Dr. Grosch has also been an Associate in Astronomy at Columbia University, teaching courses in computing methods and celestial mechanics.

RETIREMENT

HOWARD P. CORWITH, Research and Engineering vice president of Western Union, retired December 31, it was announced by Walter P. Marshall, president.

For more than 43 years Mr. Corwith has contributed to the company's advances in research, especially in radio beam, facsimile and submarine cable communication. Research and development under his leadership have had a prominent role in revolutionizing telegraph operations in the past decade. Mr. Corwith is a past president and director of the New York Electrical Society, a fellow of the American Institute of Electrical Engineers and a fellow of the Institute of Radio Engineers.

MAC SALES MANAGER

CONRAD C. KOHLHEYER has been appointed Sales Manager in Charge of Marketing for the MAC Panel Company of High Point, N. C. The company has a sales force of over one hundred representatives in the United States and Canada.

SUCCESSION

Resignation of A. E. CARLSON as president of Comptometer Corporation and election of J. A. SCHRAM as president was announced by the board of directors.

Mr. Carlson, who became president of Comptometer in June, 1956, revealed he had been compelled to restrict his activities to less than a full-time basis recently because of health reasons. He will continue as a director of the company.

Mr. Schram, whose election as president became effective immediately, has been a director of Comptometer and head of the company's Burke Golf Division since the company acquired Burke in May of 1959.

MANUFACTURING DIRECTOR

International Business Machines Corporation announced the appointment of WILLIAM R. SWETT as director of manufacturing controls. He will report to the director of manufacturing services on the corporate staff.

Mr. Swett joined IBM in 1958 as an organization consultant. He was previously senior vice president of Bruce Payne and Associates, management consultants.

CHIEF ENGINEER

ROBERT T. BLAKELY has been named Chief Engineer of Product Planning at Remington Rand Univac Division, Sperry Rand Corporation, Philadelphia. Mr. Blakely will be in charge of technical evaluation of new product planning programs and development of new product specifications. He will also be responsible for the newly announced product planning representatives in the regional sales offices and for product planning in the company's operations at St. Paul, Minn. and South Norwalk, Conn.

MARKETING MANAGER

WILLIAM L. LONG has been named manager of the transportation industry marketing department, Remington Rand Univac Division, Sperry Rand Corporation, New York. He succeeds G. W. HELM, who has been named manager of industry marketing.

Mr. Long joined the company in 1946 in Cleveland, as a sales representative. In 1951, he was named assistant manager of transportation, a position he has held up to his present appointment.

GROUP EXECUTIVE

Bendix Aviation Corporation announced the election of R. C. FULLER, general manager of its Pacific Division, North Hollywood, Calif., as vice president and group executive of the corporation and member of the corporation's administration committee.

Fuller will continue as general manager of the Pacific Division and in addition will supervise Bendix Computer Division, which has national headquarters in Los Angeles, and Bendix West Coast marine activities, headquartered in North Hollywood.

The Computer Division of Bendix manufactures general-purpose electronic computers and related equipment for commercial and military applications.

DATA CENTER

Philadelphia has joined the major cities where powerful IBM computers will be available to businesses by the hour.

International Business Machines Corporation announced that a Datacenter will be operating in the metropolitan area by mid-1960. Previously announced was a Wall Street Datacenter for New York City's financial district next March. In April a Chicago Datacenter will be opened, and in May a Los Angeles facility. Others will follow. They will be established by IBM's Data Processing Division.

The Philadelphia Datacenter will house an IBM 7070. It will be open to all businesses regardless of whether they have been IBM customers in the past. Users will supply their own programmers (people who develop instructions for computers) and their own operators. The rate for the 7070 system will be under $300 an hour.

(continued on next page)

PRESIDENT AND VICE PRESIDENT RETIRE

BENJAMIN KULP, Chairman and President, and GEORGE WOLCOTT, Vice President, retired from active management of Wilson Jones Company, manufacturers of business forms and binders.

Mr. Kulp became president of Wilson Jones in 1920, succeeding Ralph Wilson, founder of the firm. The company's capital increased from $900,000 to $8,000,000 during his administration. Sales rose from $1,700,000 a year to $18,000,000 and dividends of $8,000,000 were paid to shareholders.

Mr. Wolcott in 56 years of service has been associated with Twinlock, Irving Pitt, and since 1929, Wilson Jones. He is known intimately by thousands of stationery dealers throughout the country as "Mr. Loose Leaf."

PATENT COUNSEL

THOMAS J. PLANTE has been named chief patent counsel of the Bendix Aviation Corporation. He will head a staff of more than 30 patent attorneys, and supervise and direct the policies and procedures of the company concerned with all patents and licensing.

In addition, Plante will supervise the evaluation and acquisition of new patented products in an expansion program Bendix has instituted in this field. Plante's new headquarters will be in the Detroit offices of the company, ranked among the top ten U. S. patent-holding corporations.

COMPONENTS SALES MANAGER

R. DAVID MINER has been appointed sales manager of the Components Division of Telemeter Magnetics, Inc. Mr. Miner poined TMI in June 1959 when the Components Division was organized.

The Division is engaged in development, manufacture, and sale of ferrite components including computer storage cores, wired arrays, and memory stacks for commercial and military applications.

DATA PROCESSING MANAGER

Management Associates of San Jose, Calif. has appointed CHARLES H. WORKMAN manager of its Data Processing Service Center, and PATRICK C. MOORE, methods analyst.

Workman will head the company's large-scale IBM 7070 computer facility which is scheduled for installation at the International Science Foundation's Science Center in Sunnyvale, California next year.

PARTNERSHIP

NEAL J. DEAN has been admitted to the partnership of Booz, Allen & Hamilton, nationwide management consultants, it was announced by James L. Allen, senior partner.

Mr. Dean, located in the firm's New York office, was previously Technical Director of their electronic data processing department. He has specialized and will continue to work in consulting on data processing systems for banks, utilities and industrial firms throughout the country. Before joining the company in 1958, Mr. Dean was head of the data processing consulting services for Ramo-Wooldridge Corp.

MANAGER AT AERONUTRONIC

RONALD S. GREENSLADE has been appointed manager of the Electronics Department, Tactical Weapon Systems Operations, at Aeronutronic, a Division of Ford Motor Company.

In this capacity he is responsible for all guidance and control, electronic support equipment, and instrumentation activity.

DYKOR SALES REPRESENTATION

Digitronics Corporation announces the appointment of Components Sales Corporation, Hartsdale, N. Y. as its representative for the sale of the DYKOR high speed perforated tape reader. The territory covered by Components Sales is New York State and the northern half of New Jersey.

STROMBERG-CARLSON SALES MANAGER

GEORGE W. McGINLEY has been appointed sales manager of Stromberg-Carlson, San Diego, Warren C. Dunn, manager of marketing announced. Stromberg - Carlson, with headquarters in Rochester, New York, is a division of General Dynamics Corporation.

Mr. McGinley will be responsible for all sales activities for Stromberg-Carlson—San Diego's line of high-speed electronic printers, data display and recording devices, CHARACTRON shaped beam tubes and other electronic equipment.

A native of Pittsburgh, Mr. McGinley has been supervisor of system sales for Union Switch and Signal division of Westinghouse Airbrake Company.

He is a member of the Institute of Radio Engineers, American Management Association, Petroleum Electric Supply Association and American Gas Association.

GENERAL SALES MANAGER

LESTER J. TIBBETTS has been promoted to general sales manager of Pioneer Business Forms, Inc., of Tacoma, Wash. according to an announcement by President A. B. Howe.

Mr. Tibbetts, who was district sales manager of the Tacoma area for Pioneer prior to assuming his new role, is now supervising various marketing functions of his company, in addition to sales.

TMI REGIONAL MANAGER

WILLIAM P. WILSON has been named Midwestern Regional Manager for Telemeter Magnetics, Inc., Los Angeles, designers and manufacturers of core memories and data equipment. He will direct applications engineering activities for TMI throughout the midwest, with headquarters in Lake Bluff, Ill. Mr. Wilson was graduated from the University of Missouri with a BSEE.

NMAA CONFERENCE

The 1960 National Conference and Business Show of the National Machine Accountants Association will be held June 22 - 24, 1960 in San Francisco, Calif. Conference Headquarters: Mark Hopkins and Fairmont Hotels. Exhibit Hall: California Masonic Memorial Temple. For further information, write P. O. Box 3617, Rincon Annex, San Francisco 19.

NORTHEASTERN NMAA REGIONAL CONFERENCE

The Third Annual Regional Data Processing Conference of the National Machine Accountants Association will be held April 8 - 9, 1960 in Syracuse, N. Y. Full conference information available from Mr. Robert Bell, Drug Trading Co., Ltd., 15 Ontario Street, Toronto, Ontario, Canada.

■ ■ ■

OUTPUTS

ITEMS OF INTEREST FROM HERE AND THERE

GAMES

Speaking before a three-day seminar on Mathematical Modeling and Simulation sponsored by International Business Machines Corporation, Dr. Max A. Hirschman, Research Director for the U. S. Army Logistics Management Center, Ft. Lee, Va., illustrated the development of the theory of gaming into a practical tool for research and training.

He cited three current games. All demand that the "players" make executive decisions which are weighted by mathematical formulas to score the participants on the effectiveness of judgments they would be called on to make in actual management positions.

"Each hour of computer-assisted decision-making will approximate one year of actual management experience in virtually all these games," Dr. Hirschman said. He explained that the hour is the time allotted for four three-month decisions.

BANK SYSTEMS

U. S. banks have placed orders for 33 complete electronic Visible Record Computer systems in less than two months.

V. James Ford, manager of financial sales for Burroughs Division, said orders received for the transistorized bank automation system are in excess of $7,000,000. Burroughs introduced the VRC system at its Research Center in Paoli, Pa., last September. The system lists at $217,400 or it can be leased for $3,975 a month.

FORD GRANT

The University of Michigan has been granted $1,175,000 by the Ford Foundation as one of the first of the new Foundation grants in science and engineering. Henry T. Heald, Foundation president, announced the program in an address in Washington, D. C. before the annual meeting of the American Institute of Consulting Engineers. The university will use the grant for two projects.

The major share, $900,000, will be used to support an experimental program leading to the widespread use of high-speed computers in engineering education. While U. of M. will direct this program, a number of faculty members of other institutions will be invited to participate. The remainder is to be used to strengthen engineering education by recruiting and maintaining promising faculty members.

SABRE FOR AIRLINES

The use of electronic computers that will benefit the traveling public in terms of airline reservations service was announced by American Airlines' President C. R. Smith and IBM President, Thomas J. Watson, Jr.

The prototype working model for American's reservation system, known by the code name of SABRE, was shown and demonstrated at a press conference. SABRE will store more than 600,000,000 characters and handle more than 7,500 complete airline reservations per hour.

American Airlines will begin installation of the SABRE system in late 1961. Most of the cities served by American will be linked to the computing center located in the New York metropolitan area, by leased telephone lines, by the end of 1962.

The system is the result of six years of research by IBM and American. This special purpose system, designated the IBM **9090**, will assist American in processing:

85,000 daily phone calls.

30,000 daily requests for fare quotations.

40,000 daily passenger reservations.

30,000 daily queries to and from other airlines regarding seat space.

20,000 daily ticket sales.

The Components of SABRE

The system is made up of *three* major elements:

1. The Agent Sets— at more than 1,100 reservations sales desks, they enable agents to communicate directly with the processing center in New York.

2. The Electronic Reservations Processing Center — This is the heart of the system. It performs all the data processing required by the airline's reservations system.

3. The Communications Network — more than 10,400 miles of telephone lines. It connects the *Agent Sets* with the *Electronic Reservations Processing Center.*

The Reservations Processing Center

The center contains the following equipment:

1. High-Speed Data Processing System. This unit consists of two IBM large-scale transistorized computers.

2. A Disc Memory System for Data Storage. In addition to the internal magnetic core storage system, the Center contains memory files in magnetic disc form.

3. Information Channels, Other Input and Output Equipment. Information channels are processing units to schedule and control data input

(continued on next page)

and output between the computer and the magnetic disc memory files, the communications lines to the agent sets, and other equipment in the Reservations Processing Center.

Here is what happens in a typical transaction:

1. A customer calls American Airlines in New York to reserve a "seat on a flight to Chicago, leaving New York sometime tomorrow . . ."

2. The agent selects an Air Information Card marked "Chicago" from the file before him. This card lists all American Airlines flights between New York and Chicago. It indicates the type of service, the frequency of service, departure and arrival times, the flight number, one way and round trip fares.

3. The agent inserts this card into the *Air Information Device*. The card remains in view during the entire transaction.

4. The agent enters the date for the trip by pushing buttons on the console.

5. The agent records the number of seats required by pushing a numbered button.

6. The agent presses the "availability" button. This automatically transmits all the previously entered data to the computing center in New York. It also transmits the coded information contained in the Air Information Card.

7. The computer automatically scans its magnetic disc memory files to see which flights to Chicago have space available for that day. This availability status is sent immediately to the agent.

8. The computer's response is shown by lights next to the Air Information Card which indicate available routings.

9. The agent recommends the flights which best suit the passenger's needs.

10. When the passenger chooses his flight, the agent presses a button marked "Sell." This instructs the computer to record a reservation and to subtract a seat from the inventory of the specified flight and date.

11. A record of the sale is printed out automatically on the agent's printer. This record contains the flight number, date, action taken (sell), number of passengers, destination city, and departure time. This same data is stored in the passenger record by the computer.

12. The agent confirms the sale to the customer by checking the details of the message with him.

13. If the passenger wants return reservations, the agent turns over the Air Information Card to show the return flights which are listed on the reverse side of the card. Then the steps described above are repeated in a matter of a few seconds.

14. After entering the itinerary, the agent asks the customer for his name, his home and business telephone numbers, the name of the person making the reservation if other than the passenger, and any special requirements the customer may have — such as a rental car at the airport. At this time the agent also tells the customer of the time limit for picking up his ticket.

15. The agent enters all this information as given him by the customer. The information is displayed on the printer of the agent set and is transmitted to the computer item by item. The computer acknowledges receipt of each item of information by transmitting a reply to the agent.

16. The agent signals the computer that the transaction is ended by pressing the "end transaction" button.

17. The computer checks back through the record for completeness, and sends a message to the agent through the printer, notifying him of any omissions. If there are none, the message "o.k." is printed out to the agent.

18. All the information is then stored in the disc files as the "passenger name record."

A similar procedure, using a different set of Air Information Cards, is used if the customer wishes a reservation for a flight departing from a city other than that in which the agent is located.

NSF GRANT

Brown University has received a grant of $350,000 from the National Science Foundation to be used for the purchase of a high speed computer, the IBM 7070. The new machine will be installed in the computer center building now under construction.

The system will cost close to a million dollars. But IBM has granted Brown a 60 per cent allowance on the cost of the machine under its educational support program, the purpose of which is to support instruction and research at universities in the field of data processing.

USED MACHINES

Sales of used accounting machines by Burroughs Corporation increased 50 per cent during the first full month of a new sales program aimed at creating a nation-wide market in the U. S. and Canada for used equipment.

Under the new program, equipment traded in at any one of the firm's 144 branches is made available to all other sales outlets in the two countries through a coordination center established at Burroughs' home office in Detroit.

Unit sales of used machines in the company's Sensimatic line rose 48 per cent and dollar volume went up 57 per cent during the first month, the sales executive said.

FOREIGN AGREEMENTS

According to an announcement made by Litton president Charles B. Thornton, his firm and some of the shareholders in Svenska Dataregister AB have signed agreements whereby Litton acquires a majority interest in Svenska. Simultaneously Litton has purchased 100% ownership of two companies distributing Svenska's products in the U. S., Mexico and Switzerland.

With research facilities, manufacturing plant and headquarters in Stockholm, Sweden, Svenska is a world-wide producer of cash registers and point-of-sale recording equipment under the "Sweda" brand name. The two distributing companies acquired by Litton are Sweda Cash Register, Inc. which headquarters in Chicago and serves as the American distributing organization for Sweda products, and the foreign distributing company of Sweda Registrierkassem, A. G., Zurich, Switzerland. The distributing companies will be administered through Litton's Monroe Calculating Machine Company division.

CUE

Users of the Burroughs 220 electronic data processing system have formed an organization to be known as CUE — Cooperating Users' Exchange.

At a recent organizational meeting in Boston, delegates from across the nation elected the following officers: President, Robert M. Gordon, Stanford University; Vice-President, Richard C. Lesser, Cornell University; Secretary, Merle D. Courson, First National Bank of San Jose.

ARGUS ASSEMBLY MANUAL

The assembly language of "Argus," automatic routine generating and updating system for the Honeywell 800 electronic data processing system, has been embodied into a manual for distribution throughout the nationwide sales and service organization of the DATAmatic Division of Minneapolis - Honeywell Regulator Co. Argus reduces the time and effort required to code and check out programs for the Honeywell 800 by allowing the computer itself to perform the routine clerical operations. The Argus integrated system of automatic programming is compatible with the Honeywell 800 business and algebraic compilers.

DATA REDUCTION SYSTEM

The ALWAC Computer Division of El-Tronics, Inc., was awarded a contract in competitive bidding by Marquardt Corporation for a special on-line test data reduction system.

The first equipment delivered was an 8,192 - word memory ALWAC III-E computer installed at Van Nuys, Calif. on November 18, 1959.

The system ultimately will add computer driven punched card and line printer units, magnetic tape, and special control buffer between the C.E.C. data conversion equipment and the ALWAC computer.

■ ■ ■

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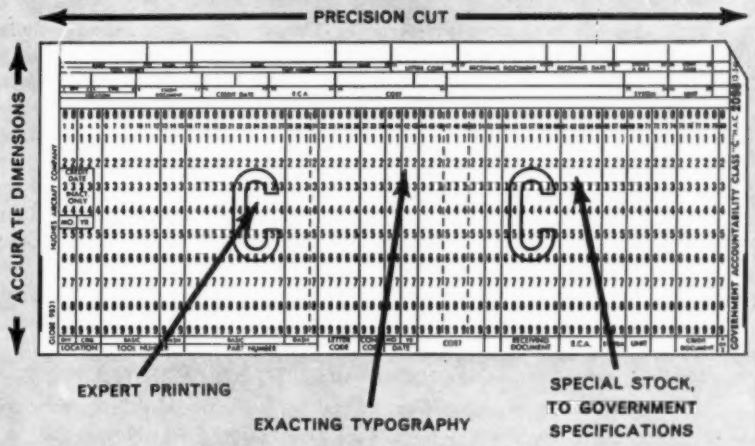

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BOOK SHELF

DATA PROCESSING — 1959 Proceedings, Charles H. Johnson, Editor, National Machine Accountants Association, 208 S. Main St., Paris, Ill., 1959, 394 pages, $10.00.

Mr. Johnson has compiled and edited a worthwhile volume of the proceedings of the 1959 convention of the NMAA held in St. Louis, Mo. It is essentially a narration of the seminars, panels and discussions that were conducted. Many of the general articles are of interest to everyone in the data processing field. Some of these lively presentations are: Why Automate?" by R. A. Gilbert; "What To Automate?" by E. W. Range; "Training Tomorrow's Leaders Today" by R. Guyon; and the text of General L. R. Groves keynote address, "Facing the Time Barrier."

RECORDS RETENTION, A PRACTICAL GUIDE by William Mitchell, Ellsworth Publishing Company, Syracuse, N. Y., 1959, 48 pages, $5.00.

The author, a systems analyst in the Univac data processing center of Sylvania Electric Products, has researched his subject thoroughly and has written a guide for businesses. Its aim is to enable business to dispose of the huge amounts of files unnecessarily retained. The reason for this retention is that business is afraid of running afoul of Federal and State Regulations for file maintenance. Mr. Mitchell claims that a business, really interested in eliminating retention of records, can effectively dispose of 80% of its records within three years. Contained in the book are schedules and interpretations of the various statutes affecting records retention. The author also presents common-sense ideas on how long to retain records either not governed by statute or retained safely beyond statutory requirements.

HANDBOOK OF AUTOMATION, COMPUTATION AND CONTROL, Volume 2, Computers and Data Processing, edited by E. M. Grabbe S. Ramo and D. Wooldridge, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1959, 1,093 pages, $17.50.

This is the second in an announced series of three volumes. The first one, published in 1958, covered control fundamentals. This volume ranges over the entire area. The subjects are comprehensive and authored by experts who treat of analog as well as digital computing systems. There is a section on "Unusual Computer Systems" which describes special systems and adaptations constructed for a particular and peculiar need. Among the subjects in Volume 2 are: Computer Terminology, The Use of Digital Computers and Data Processors and Design of Digital Computers. The authors read like a "Who's Who" of data processing and include J. W. Carr, E. Tomash, R. L. Sisson, R. G. Canning, H. Tellier.

STATISTICAL FORECASTING FOR INVENTORY CONTROL by R. G. Brown, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York, N. Y., 1959, 249 pages, $7.75.

How to design an inventory control system through better routine short-range forecasting is explained in this book. The author lists practical methods for computing average demand and the maximum reasonable demand during a lead time. He also relates of techniques for measuring uncertainty in a forecast. The beginning of each chapter develops the ideas in terms understandable by the non-technical reader. The major part of this book presents the methods with a minimum of mathematics but in sufficient detail to be effectively useful to the professional.

DATA . . .

yours for the asking

For your convenience in obtaining pertinent and helpful information on the latest equipment, forms, services and related products in the data processing field, we direct your attention to the following free literature available from the manufacturers.

ANNOTATED COMPUTER BIBLIOGRAPHY, revised and updated, has been published by Remington Rand Division of Sperry Rand Corporation. The third publication in the Univac Educational Series, this 54-page booklet should be useful to engineers, accountants, educators, and members of management teams. Besides an Introduction, the booklet has three sections: 1. Theory and Operation; 2. Applications: What Large Scale Computers Can Do; 3. General Background and Sources. A copy of this booklet may be obtained at any Remington Rand branch office, or by writing to the company at 315 Park Avenue South, New York 10, N. Y. and requesting U 1806.

FILE COMPUTER SYSTEM. An illustrated 17-page Univac Narrator describing order processing, inventory control, and sales analysis application of the Univac File-Computer System, for the Associated Grocers Cooperative of Phoenix and Tucson, Arizona, has been published by Remington Rand Division of Sperry Rand Corporation. A copy of this Univac Narrator can be obtained at any Remington Rand branch office, or by writing to the company at 315 Park Avenue South, New York 10, N. Y. and requesting UN 1220.

NEW HONEYWELL MAGNETIC TAPE LOOP TRANSPORTS and REEL-TO-LOOP ADAPTER are shown in Specifications DS 3191 and 3210. Three instrumentation-grade transports are listed, for maximum loop length of 35, 80 and 100 feet. Adapter converts Series 3170 reel transports to run 2½ to 15 foot loops. Memory, time delay and wave analyses are among applications described, and there are threading and loop-playing-time charts. For further information write F. R. Ross, 10721 Hanna St., Beltsville, Md.

OPERATIONS CONTROL PROBLEM, as solved by a Univac 120 Punched-Card Computer for management of the Mennen Company of Morristown, N. J., is the subject of an illustrated folder published by Remington Rand Division of Sperry Rand Corporation. All facets of the business — sales forecasting, production scheduling and reporting, accounts receivable, accounts payable, labor distribution, purchase order reporting and expediting, material cost and inventory — are combined into a unified operation, with current information available to all levels of management. A copy of this folder may be obtained by writing to the company at 315 Park Avenue South, New York 10, N. Y. and requesting U 1760, or at any branch office.

A NEW BOOKLET on integrated and electronic data processing describes NCR equipment designed for office automation including machines that will control the original accounting entry; produce necessary hard-copy records; accumulate individual totals for daily balance; and fit in with any data processing system. NCR equipment also has facility to produce punched paper tape or punched cards as an automatic by-product of an accounting function. The booklet is available without charge from Product Information, The National Cash Register Company, Dayton 9, Ohio, or from any NCR branch office.

PROCESSING SALES DATA on 1,000 salesmen for the East Pittsburgh Division of Westinghouse Electric Corporation with a large-scale Univac system is the subject of an illustrated folder published by Remington Rand Division of Sperry Rand Corporation. The Westinghouse Apparatus Sales Division is composed of 1,000 salesmen located in 200 administrative units throughout the country. These men sell 280 product lines and service 18,000 customer locations. The Univac I System is used to give division management a report each month which shows, on a country-wide basis, how the year-to-date sales compare with quotas. With this report, variations from quotas can be spotted by product, region, and major industry classification. A copy of this folder may be obtained at any Remington Rand branch office, or by writing to the company at 315 Park Avenue South, New York 10, N. Y. and requesting U 1693. ■

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EDITORIAL

The New Responsibility of Top Management: Increasing Profits through the Automatic Processing of Data

IF DATA PROCESSING is to make its full contribution to the company profits it must be recognized as a continuing problem of managing. Whether punched card equipment or an electronic computer are involved, top management must provide regular review and guidance of three important executive responsibilities:

I. MANAGEMENT OBJECTIVES: Thinking through the ways in which data processing can aid decision making by division heads.

The original objective of the data processing installation was the collection and reduction of data for accounting purposes. It is now known, however, that the ability to process data efficiently can provide an invaluable extension to these classical accounting functions by producing a variety of operating reports for management. These reports can be used for improving profits and reducing costs in such matters as: profit planning, production scheduling, manpower utilization, inventory control, market research and distribution analysis.

II. EQUIPMENT COMMITMENT DECISIONS: Getting the most suitable data processing equipment.

"Is an electronic computer needed?" Although the answer is "no" for most companies at this time, there are many that can economically justify the heavy installation cost and the increased operating expense. Whether or not a computer is used, equipment selection decisions will be sound only if an intimate working knowledge of the sophisticated equipment available from the various manufacturers is related to the character of the company's present and future operating needs.

III. ADMINISTRATION AND SYSTEMS DESIGN: Avoiding operating difficulties that result from faulty design and administration of the data processing system.

Even though the management objectives are well conceived and the most suitable equipment selected, administrative deficiencies can undermine the program. Many companies are unaware of such pitfalls as: (a) inadequate reports for scheduling workloads on data processing equipment; (b) failure to capitalize on economies achievable by integrating the flow of paperwork across departmental lines; (c) neglecting the automation of seemingly complex but costly clerical operations; (d) providing management with reports that are lengthy, untimely, and meaningless for decision-making; and finally, (e) not recognizing that the people who are responsible for the data processing installation need opportunities for continuous and qualified on-the-job guidance.

Top management should evaluate all aspects of their data processing systems applying these new profit improvement concepts and recognize this new responsibility to increase profits through the automatic processing of data. ■

By Eugene F. Murphy

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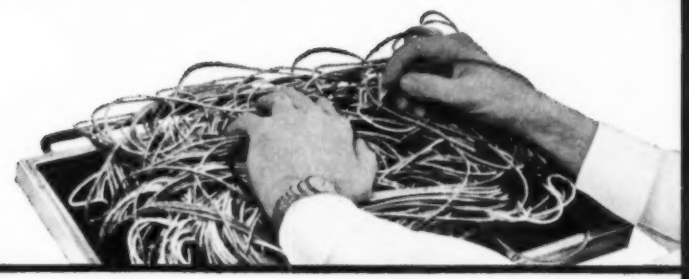

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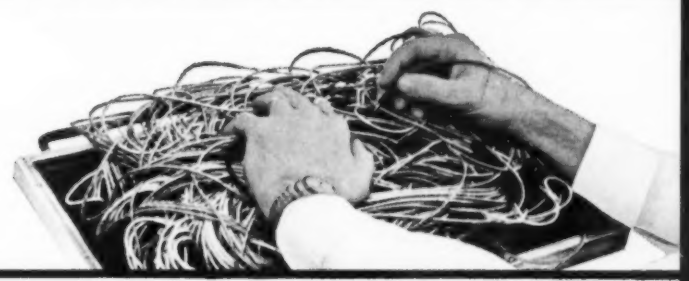

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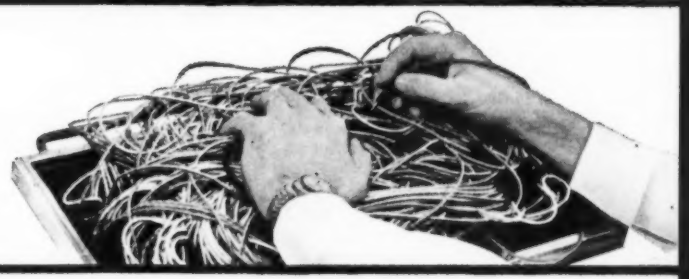

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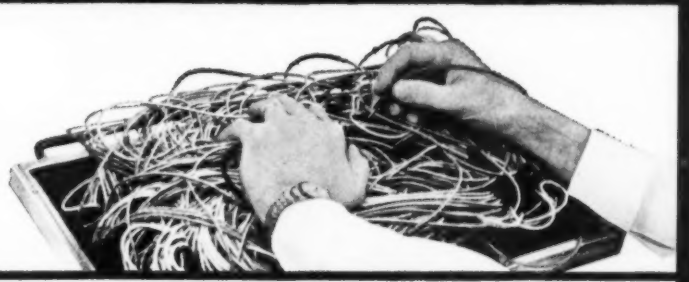

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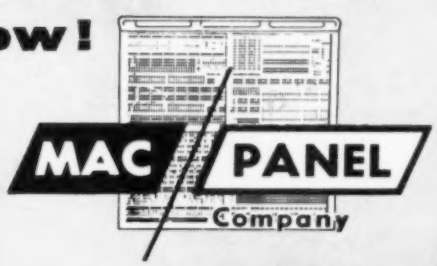

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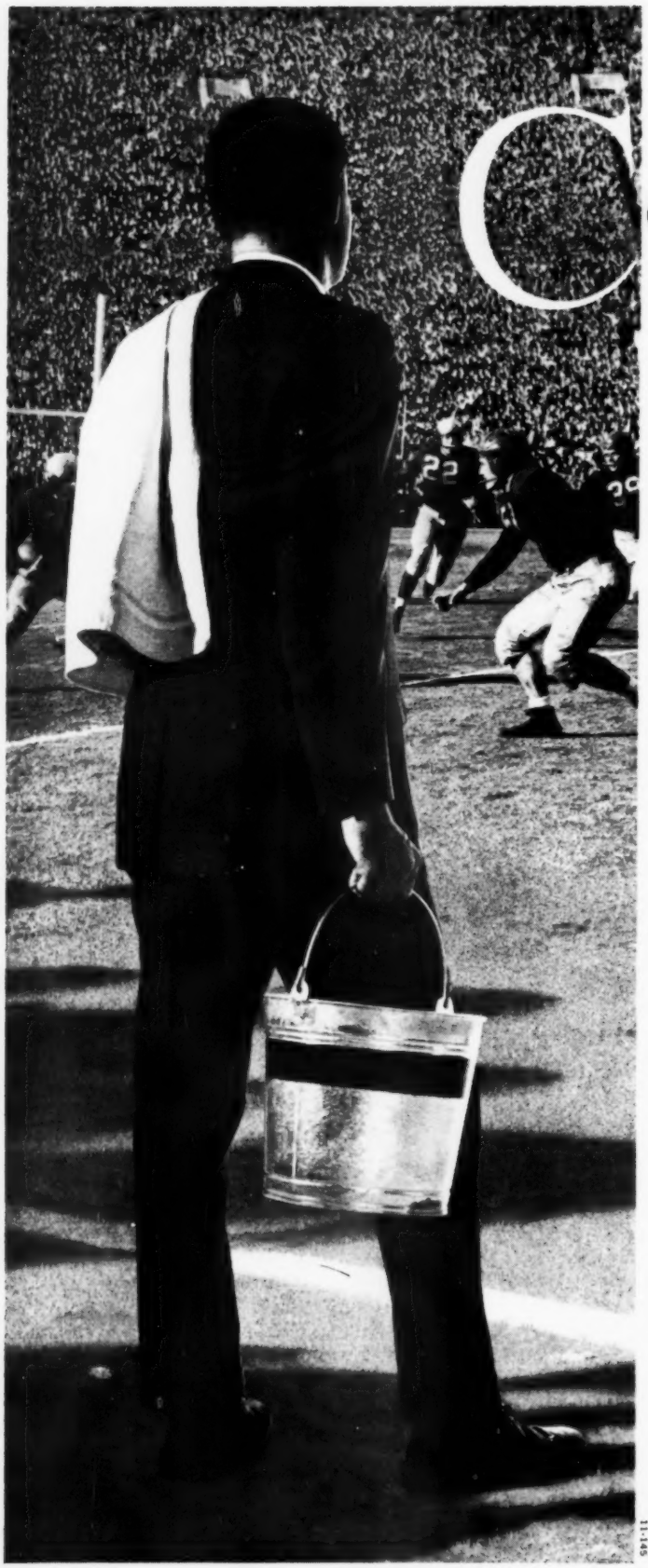

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"Project CLIP—The Design of a Compiler and Language for Information Processing," a paper by Harvey Bratman of SDC's Data Processing Research staff, is available upon request. Send request to Mr. Bratman at SDC.

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